B39298-000A !N
IN-90-TM
32991
P104

NSSDC NATIONAL
SPACE
SCIENCE
DATA
CENTER

WORLD DATA CENTER A for ROCKETS AND SATELLITES 90-10

PROMIS SERIES

VOLUME 8

Midlatitude Ground Magnetograms

(NASA-TM-105048-Vol-8) PROMIS SERIES. N91-31048
VOLUME 8: MIDLATITUDE GROUND MAGNETOGRAMS
(NASA) 104 p CSCL 03B
Unclas
G3/90 0032991

NASA
National Aeronautics and
Space Administration

Goddard Space Flight Center

NSSDC/WDC-A-R&S 90-10

PROMIS SERIES

VOLUME 8

Midlatitude Ground Magnetograms

April 1990

Prepared by

D. H. Fairfield
Laboratory for Extraterrestrial Physics, NASA Goddard Space
Flight Center, Greenbelt, Maryland
and
C. T. Russell
Institute for Geophysics and Planetary Physics, UCLA,
Los Angeles, California

Foreword

This is the eighth in a series of volumes pertaining to the Polar Region Outer Magnetosphere International Study (PROMIS). It contains 24 hour stack plots of 1-minute average, H and D component, ground magnetograms for the period March 10-June 16 1986. Nine midlatitude ground stations have been selected from the UCLA magnetogram data base that has been constructed from all available digitized magnetogram stations. Figure 1 displays the entire collection of stations. The nine stations plotted here and circled in Figure 1 have been selected as an optimal chain of midlatitude stations distributed in longitude. The stations are listed in Table 1 along with their geographic and geomagnetic coordinates. The approximate universal times of local midnight are also listed in Table 1 and marked on the individual station traces for the first day of data, March 10. Note that the availability of digitized data restricts the longitudinal coverage to just under 12 hours of local time. To aid the study of relations between high latitude effects and midlatitude effects the upper and lower envelopes of the AE index Au and Al are shown at the bottom of the plots. Note that these two traces are plotted on different scales.

A primary purpose of printing this book is to allow the users to define universal times and onset longitudes of magnetospheric substorms. It is well known (e.g., Clauer and McPherron, 1974; Rostoker et al. 1980; Nagai, 1982; Barfield et al., 1986) that substorm magnetic field perturbations are largely a result of substorm current wedges; currents flow (1) earthward from the magnetotail along auroral zone field lines in the post midnight sector, (2) through the auroral ionosphere as the auroral electrojet, and (3) back out to the magnetotail in the premidnight sector along field lines associated with the westward traveling surge. This current system produces a positive H perturbation when a midlatitude ground station (or geosynchronous spacecraft) is located between the field-aligned legs of the wedge. The D perturbation is negative if the observation point is located to the east and the downward current leg is the primary cause of the perturbation. The D perturbation is positive if the location is to the west and the upward current is the primary cause. By noting the longitude where the D perturbation reverses sign (which typically corresponds to the maximum in the +H perturbation) one can determine the central meridian of the current wedge. This location is typically within an hour or two of the 2300 local time meridian but it can vary significantly from substorm to substorm. An example of the above is the 0800 UT substorm on March 12 where the D perturbation reversal and maximum +H occurs near Tuscon when this station is located slightly past local midnight.

We note that plots of the form shown in this book can be generated through remote access to the UCLA data base where users can choose the time scale and select stations from the entire data base of over 50 stations. The UCLA data base can be accessed over SPAN by use of the SET HOST command to BRUNET and signing on the GUEST account. The program is initiated with the command PR MANAL (Russell, 1988). Users must have a graphics terminal to use the program. It is suggested that users obtain a copy of the documentation, inquire about the availability of on-line data and obtain the current password of the GUEST account from C. T. Russell before attempting to use the MANAL program.

REFERENCES

Barfield, J. N., N. A. Saflekos, R. E. Sheehan, R. L. Carovillano, T. A. Potemra, and D. Knecht, Three-dimensional observations of Birkeland currents, *J. Geophys. Res.*, 91, 4393-4403, 1986

Clauer, R. C., and R. L. McPherron, Mapping the local time—universal time development of magnetospheric substorms using mid-latitude magnetic observatories, *J. Geophys. Res.*, 79, 2811-2820, 1974.

Nagai, T., Observed magnetic substorm signatures at synchronous altitude, *J. Geophys. Res.*, 87, 4405-4417, 1982.

Rostoker, G., S. -I. Akasofu, J. Foster, R. A. Greenwald, Y. Kamide, K. Kawasaki, A. T. Y. Lui, R. L. McPherron, and C. T. Russell, Magnetospheric substorms—definition and signatures, *J. Geophys. Res.*, 85, 1663-1668, 1980.

Russell, C. T., MANAL: A program for the display and analysis of ground based magnetograms. Report available from the author, 1988.

Table 1. Magnetic Observations Whose Digital Magnetic Data are Available in the UCLA Data Base

Abrev.	Name	Geographic lat	Geographic long	Geomagnetic lat	Geomagnetic long	UT of Local Midnight
KNY	Kanoya	31.4°	130.9°	20.8°	199.4°	15.3 Hr.
MMB	Memambetsu	43.9	144.2	34.3	209.7	14.4
HON	Honolulu	21.3	202.0	21.7	267.6	10.5
VIC	Victoria	48.5	236.6	54.4	294.7	8.2
TUC	Tucson	32.2	249.2	39.8	311.4	7.4
BD	Boulder	40.1	254.8	49.5	315.7	7.0
OTT	Ottawa	45.4	284.4	57.0	351.5	5.0
SJG	San Juan	18.1	293.8	29.6	03.1	4.4
STJ	Saint Johns	47.6	307.3	59.1	18.9	3.5

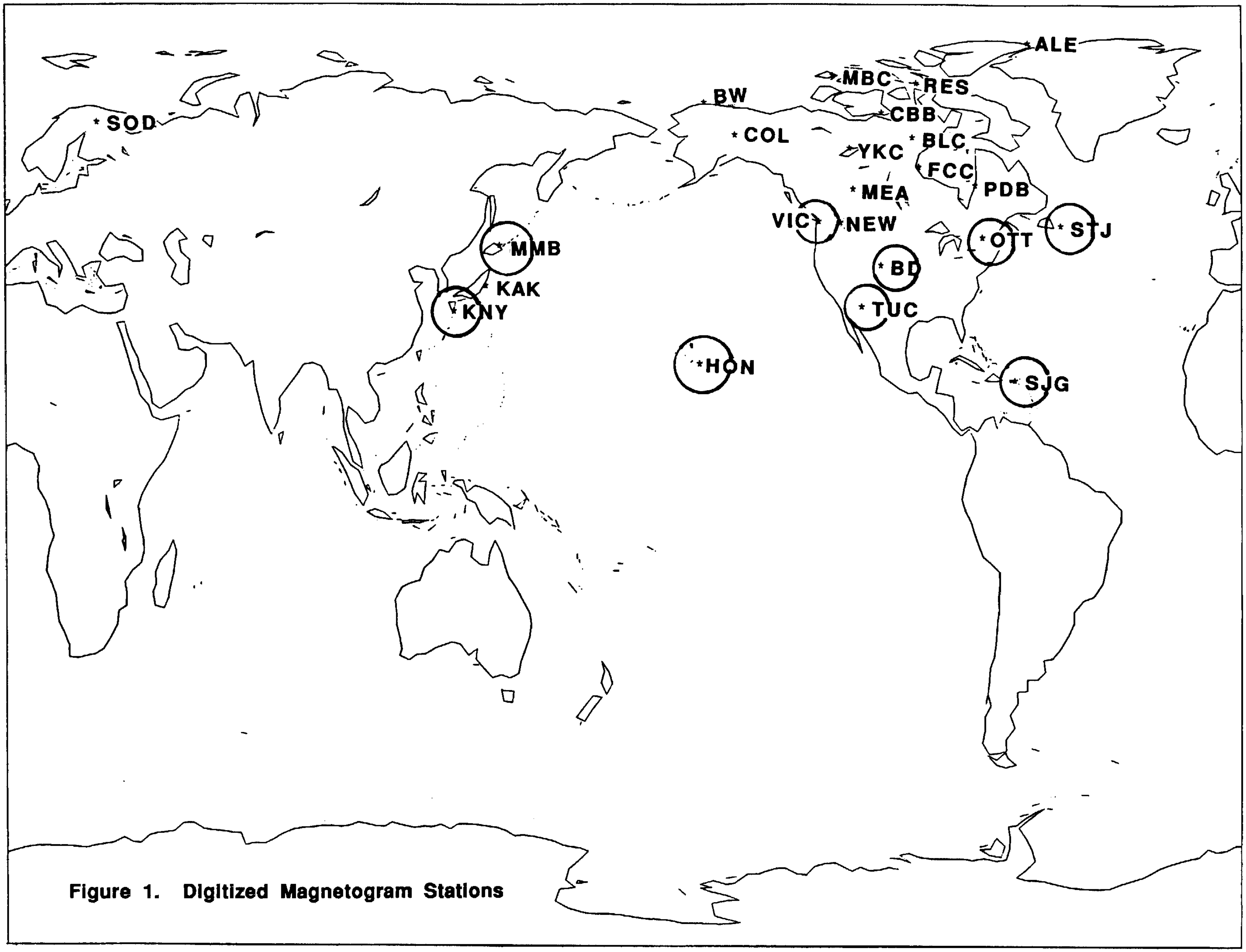
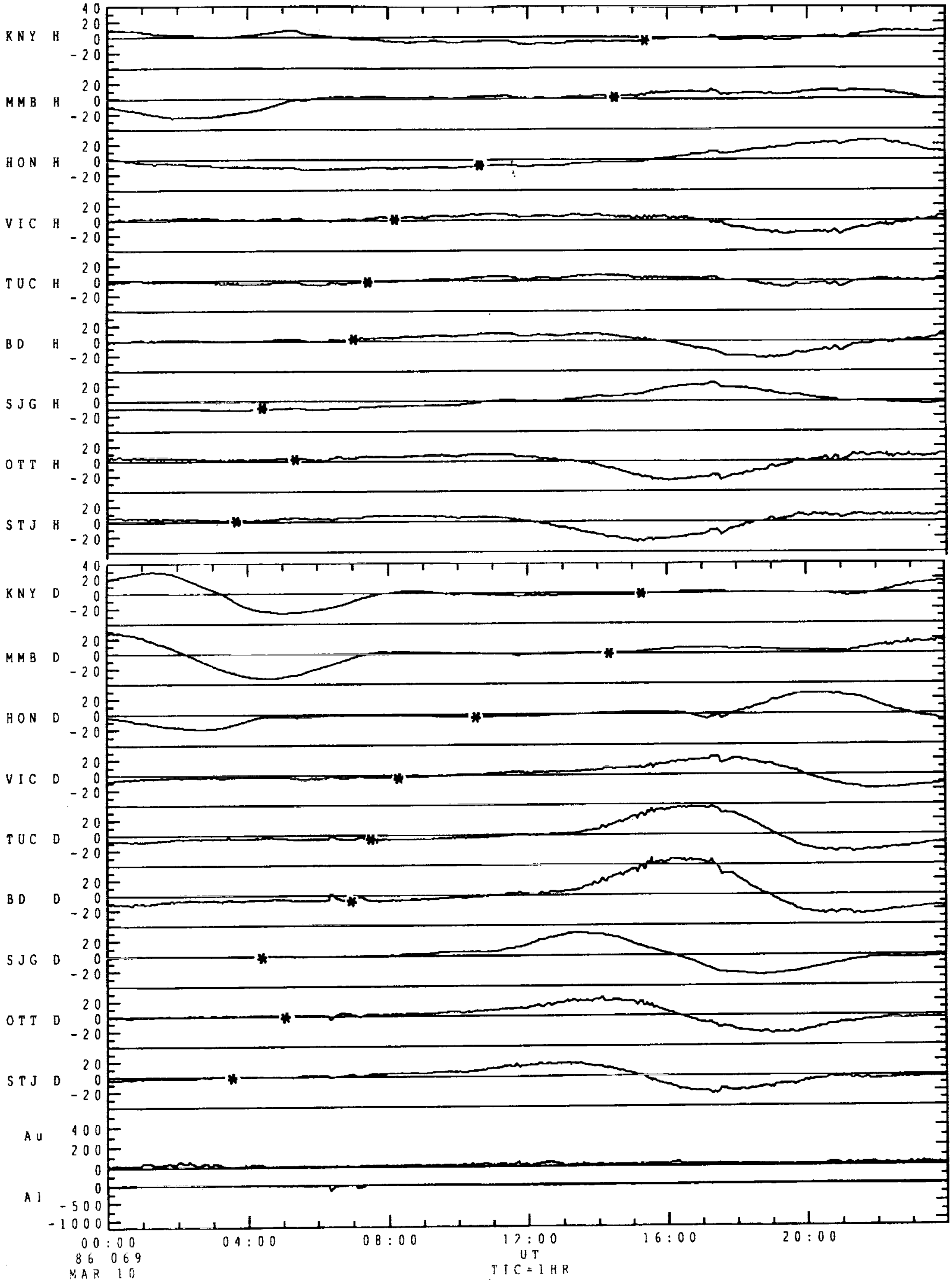
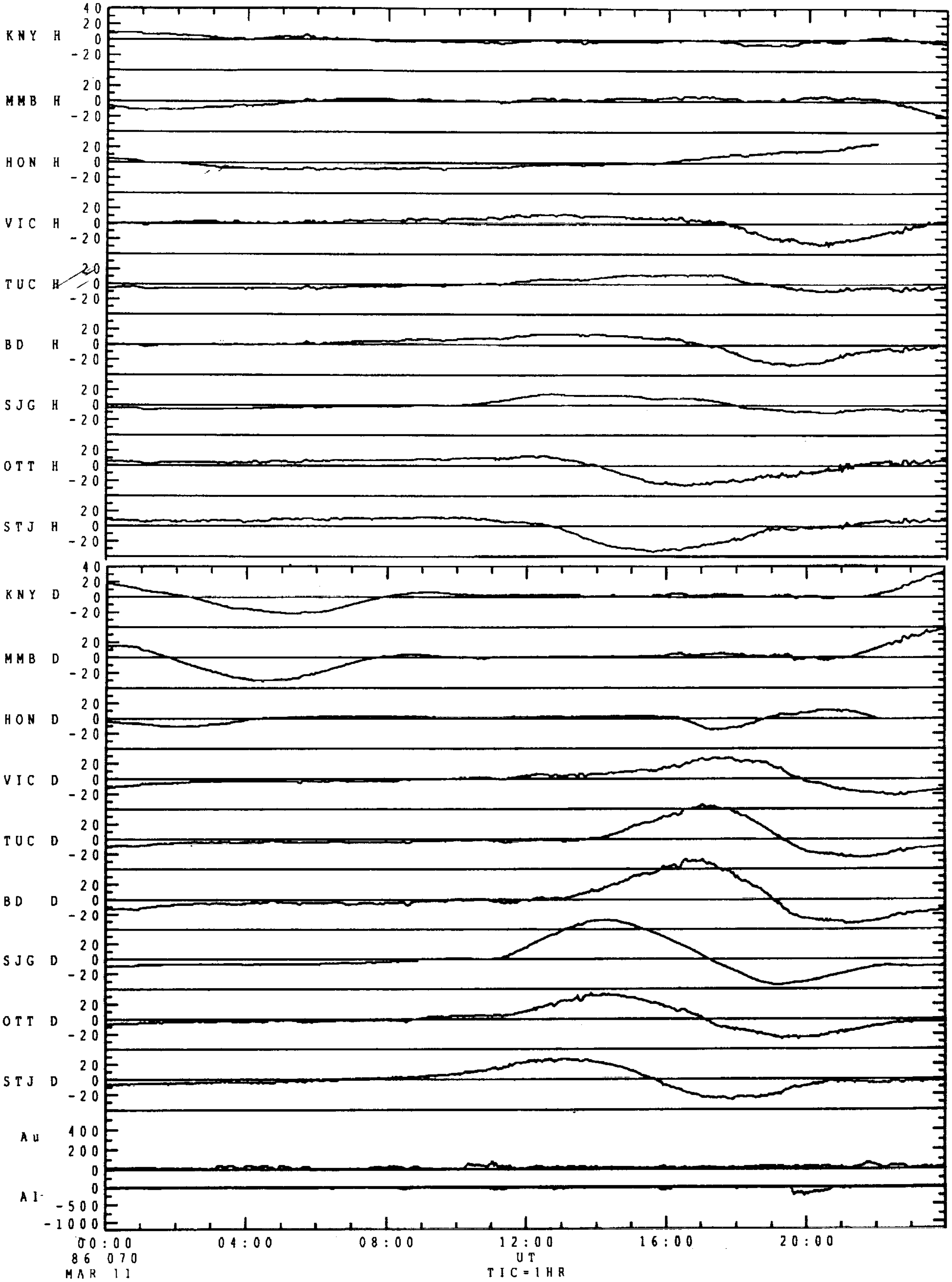

ALE
MBC
RES
BW
CBB
SOD
COL
BLC
YKC
FCC
MEA
PDB
VIC
NEW
STJ
OTT
MMB
BD
KAK
KNY
TUC
HON
SJG

Figure 1. Digitized Magnetogram Stations

MAR 10, 1986

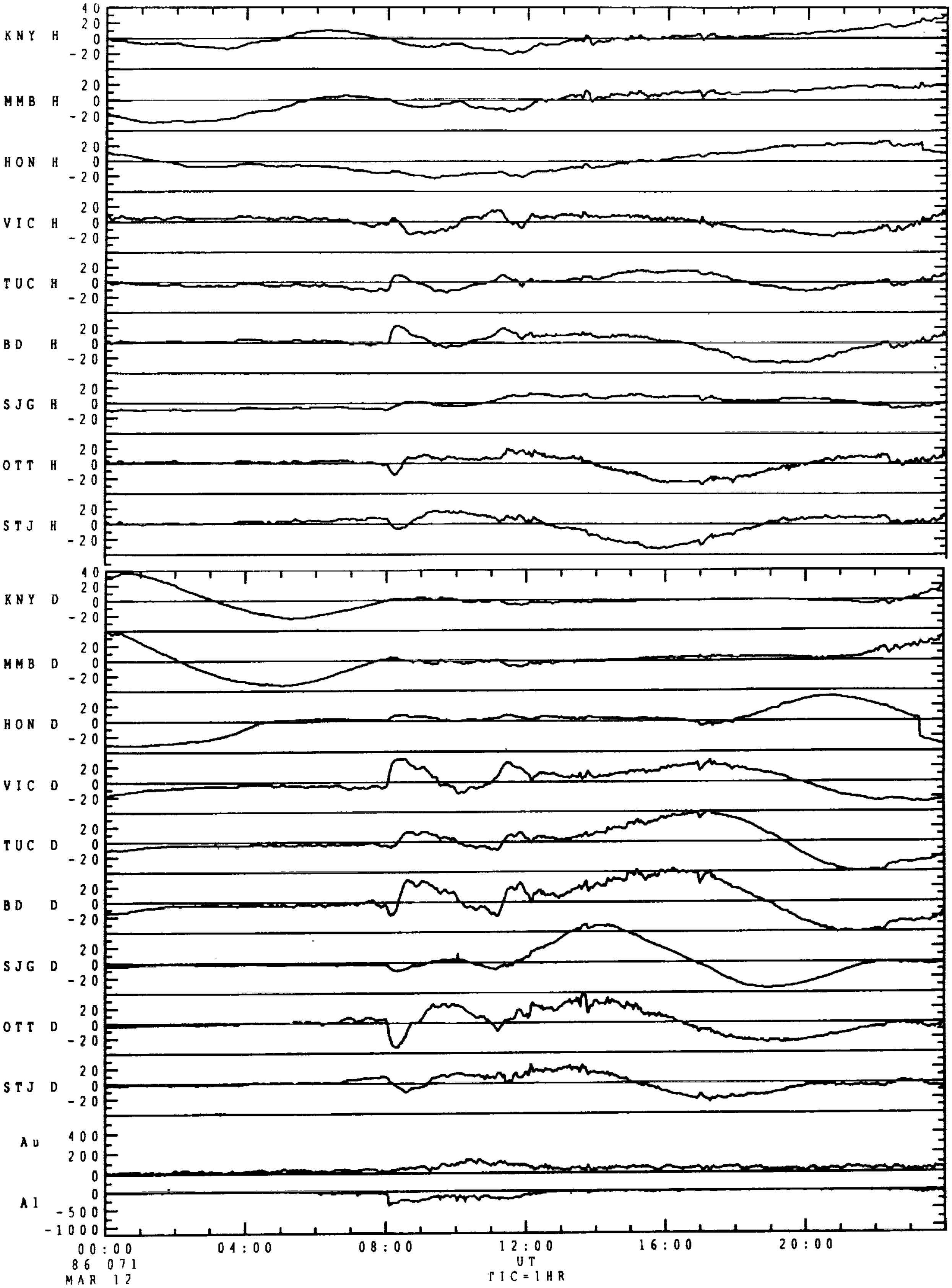

40
20
0
-20
KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
400
200
Al
-500
-1000
00:00
86 069
MAR 10
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

MAR 11, 1986 UCLA IGPP 90 JAN

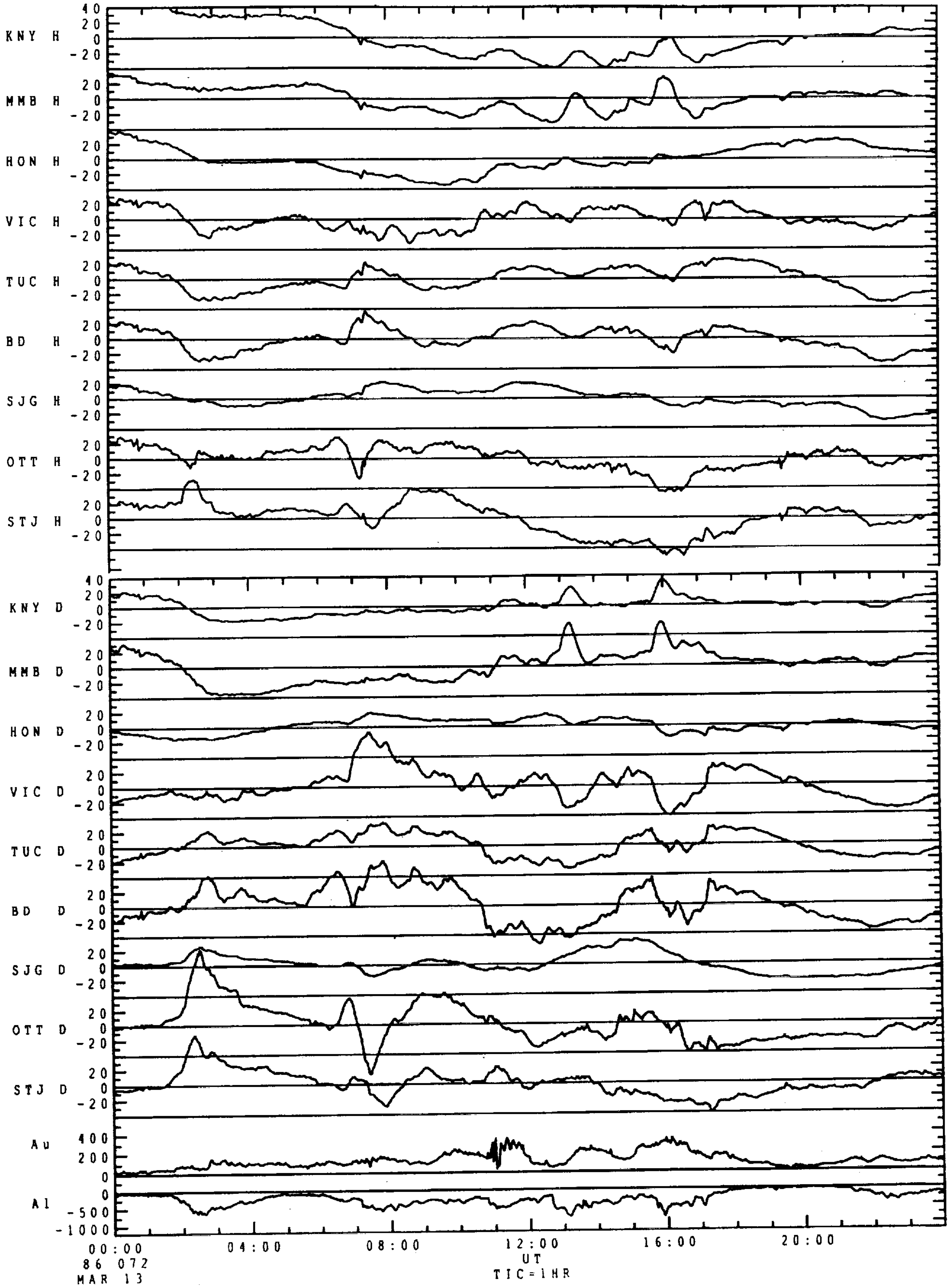


MAR 12, 1986

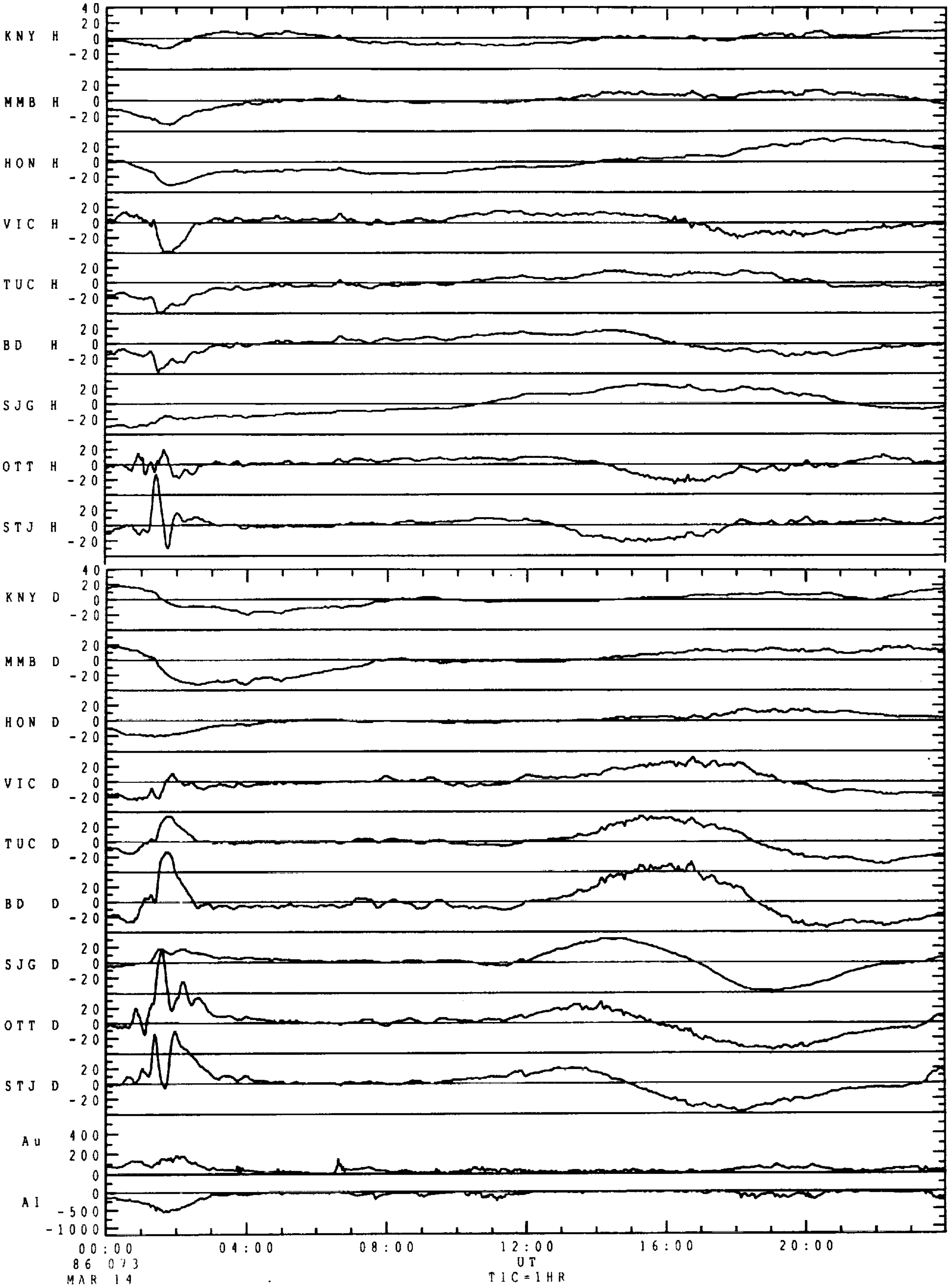
UCLA IGPP 90 JAN



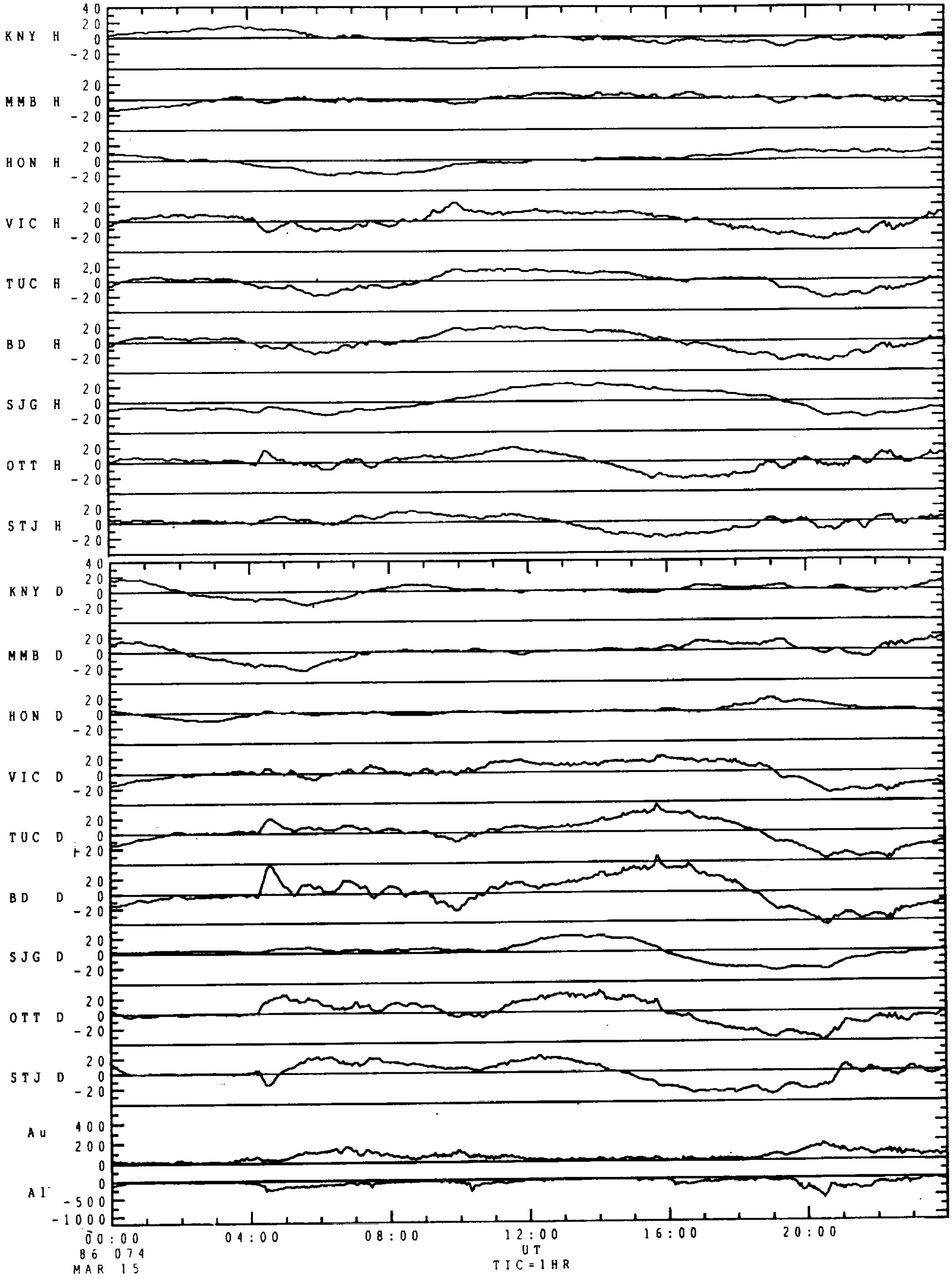
MAR 13, 1986


KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
86 072
MAR 13
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

MAR 14, 1986

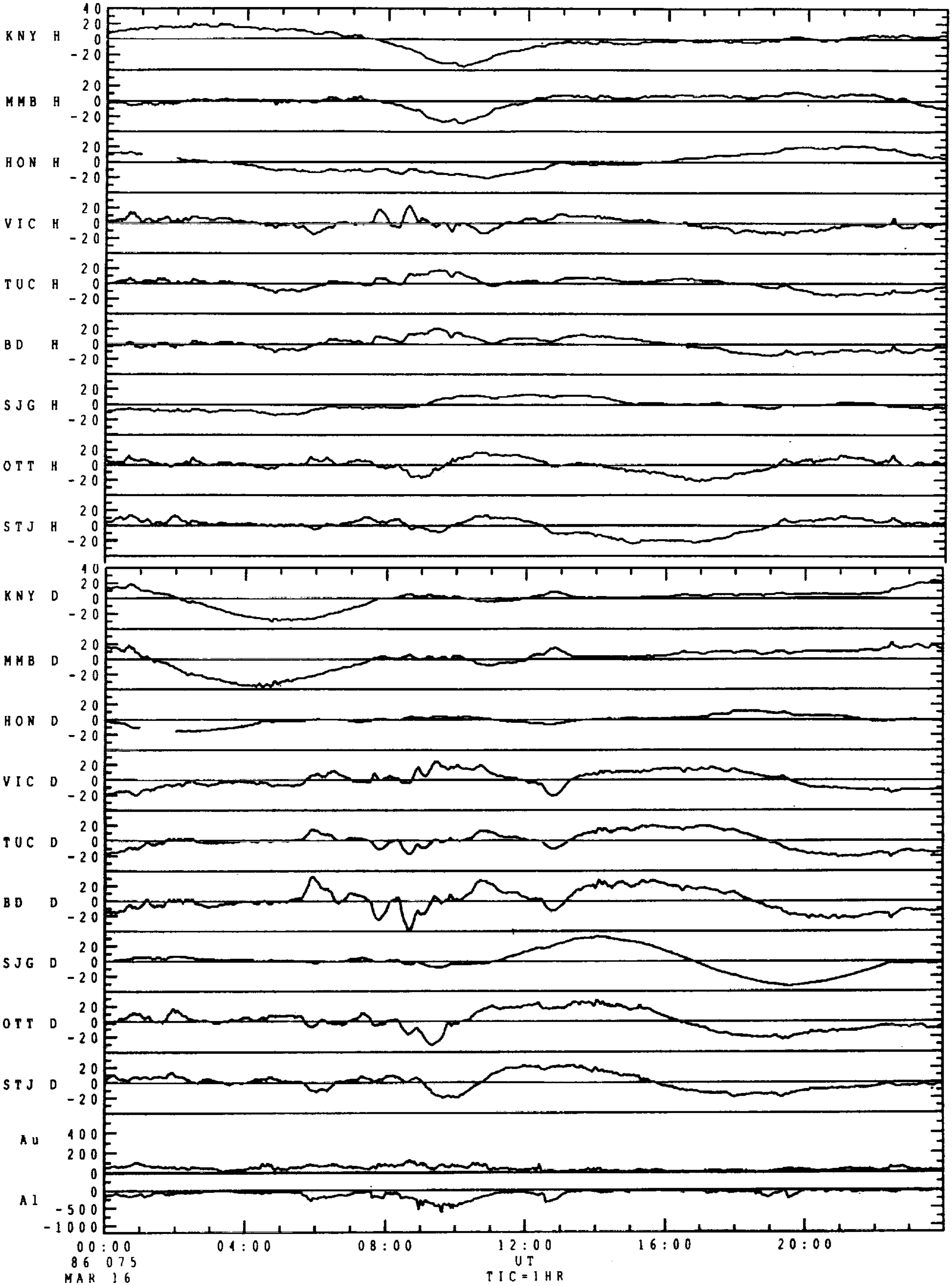

KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
86 073
MAR 14
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

MAR 15, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 074
MAR 15
UT
TIC=1HR

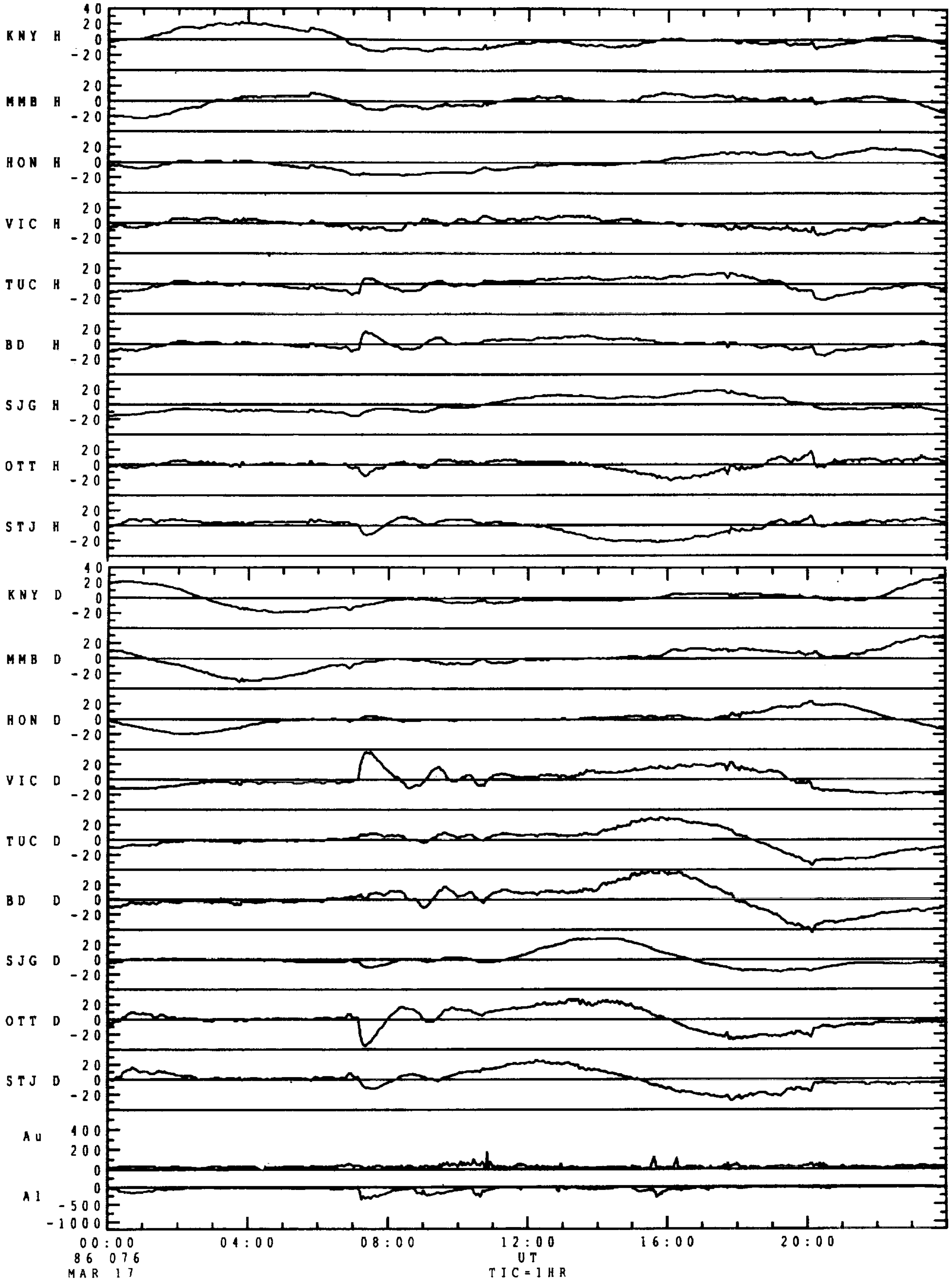
MAR 16, 1986

UCLA IGPP 90 JAN

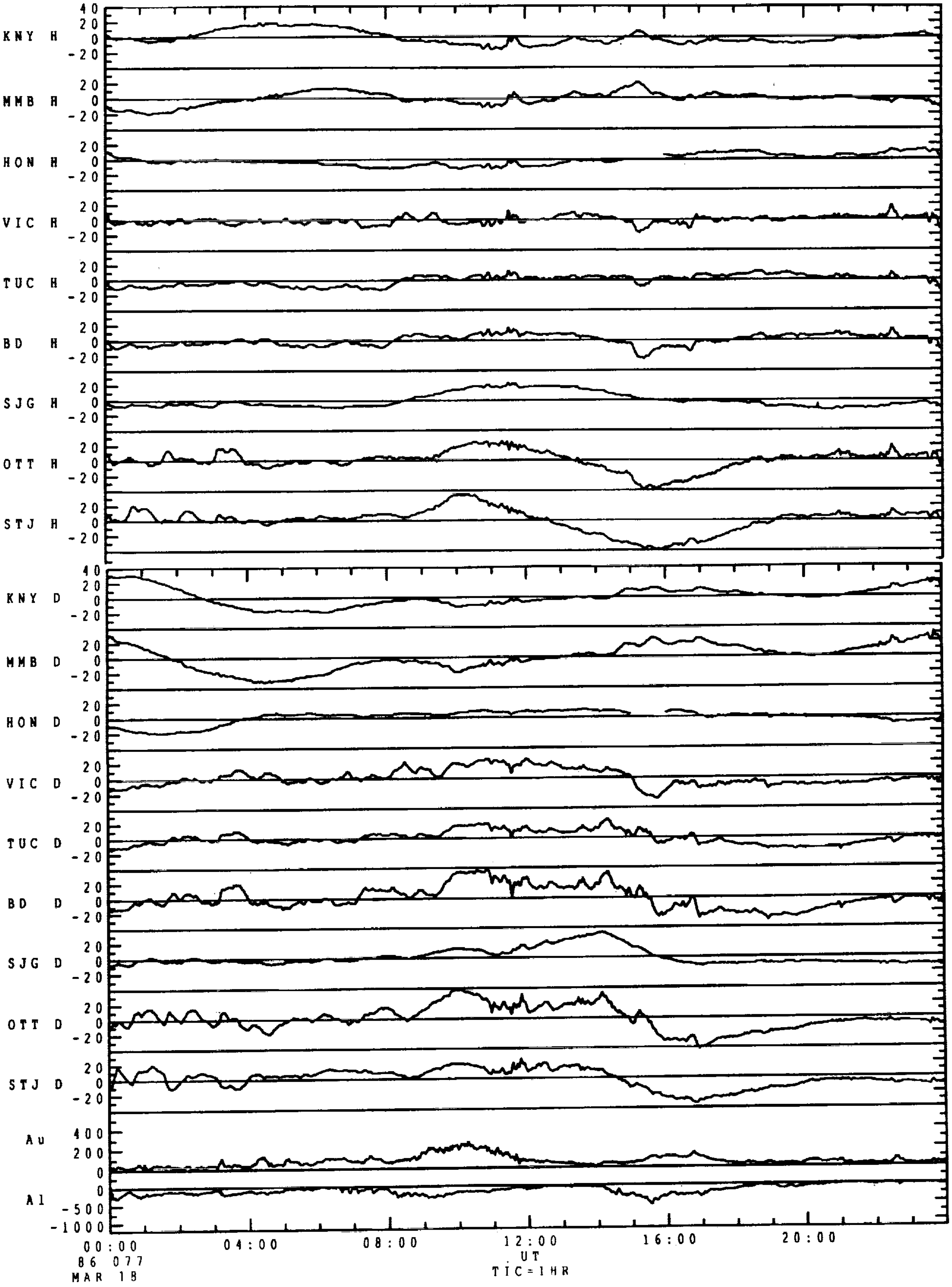


MAR 17, 1986

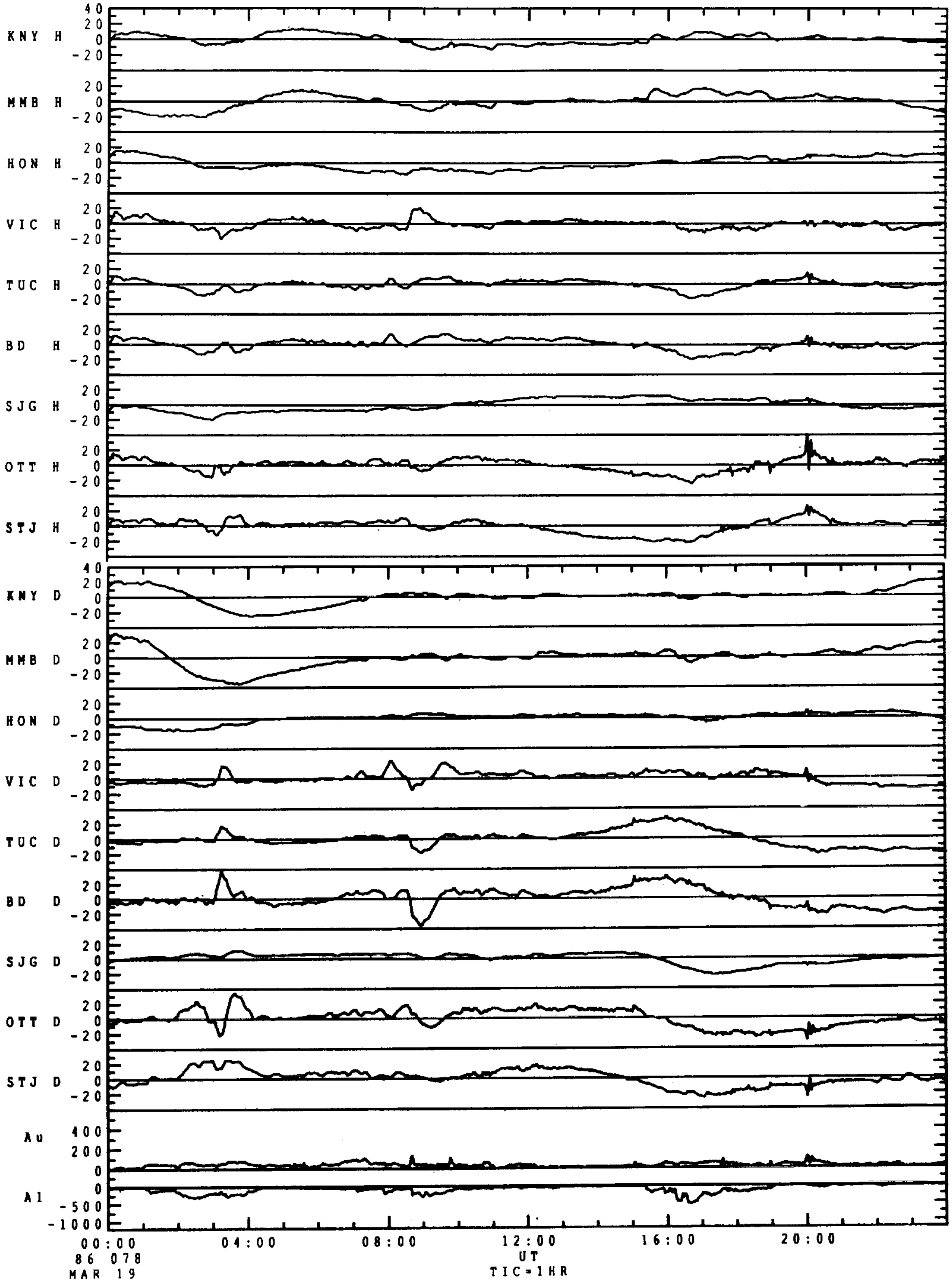
UCLA IGPP 90 JAN 5



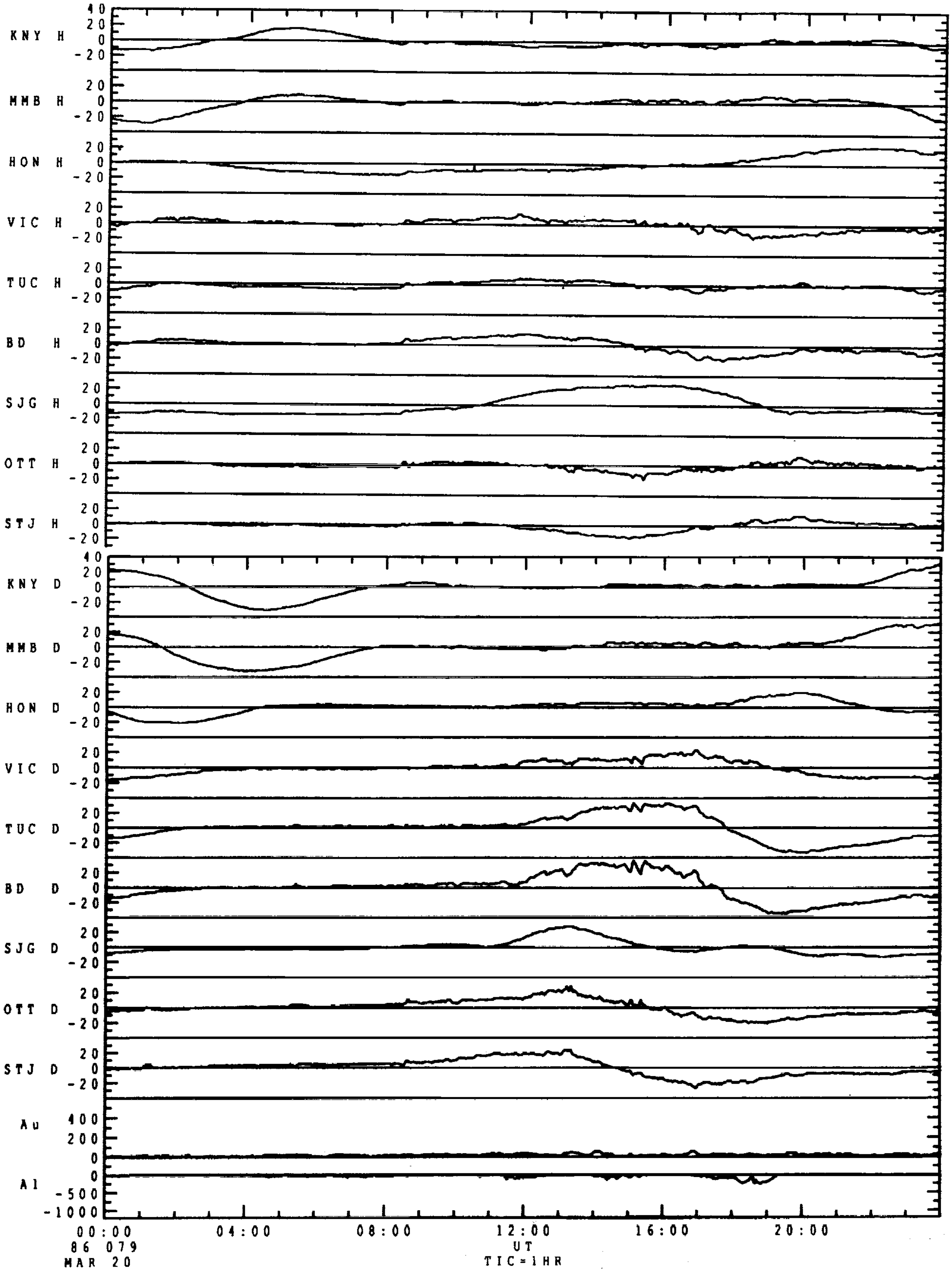
MAR 18, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 077
MAR 18
UT
TIC=1HR

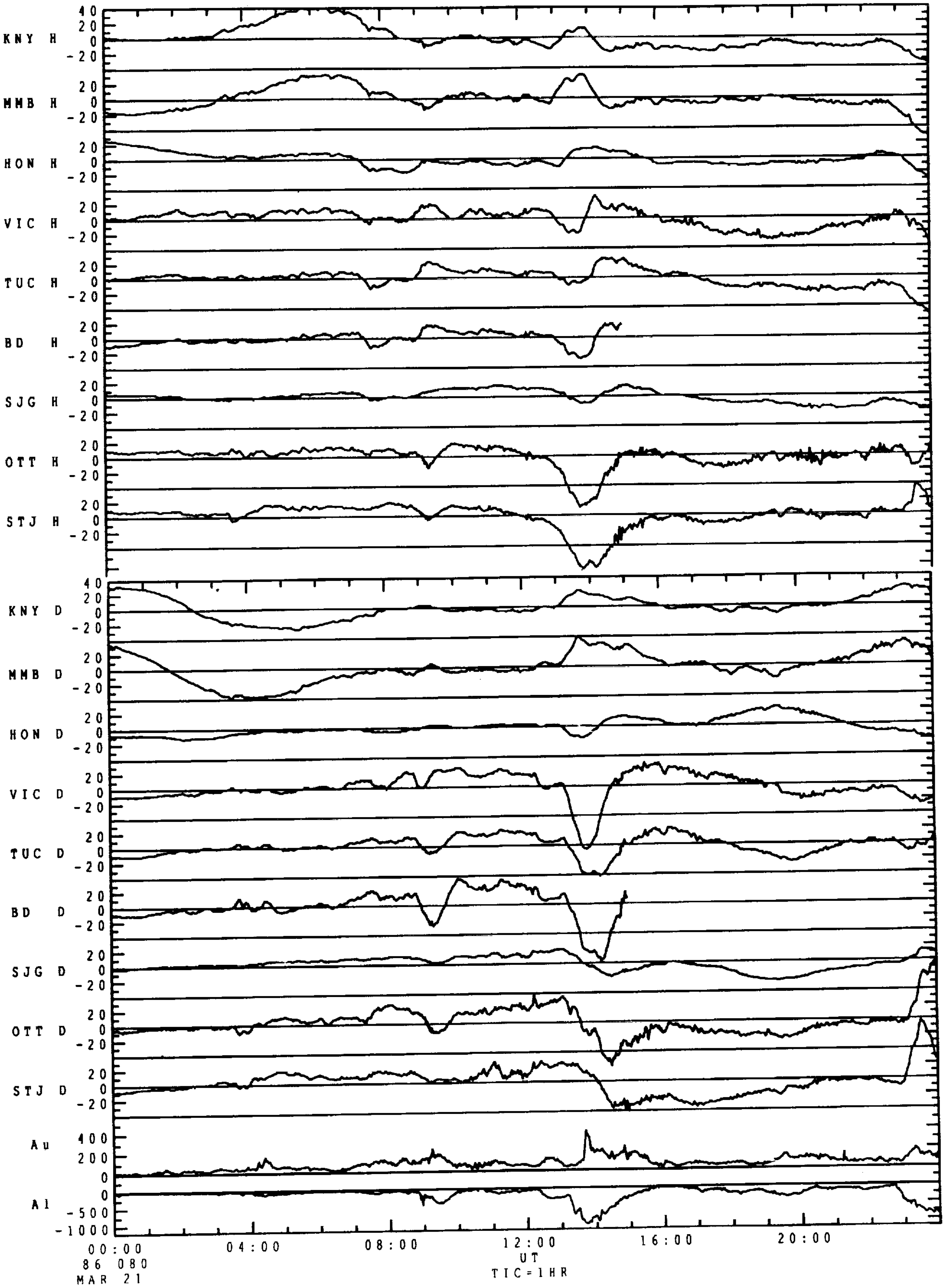
MAR 19, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
86 078
MAR 19
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

MAR 20, 1986

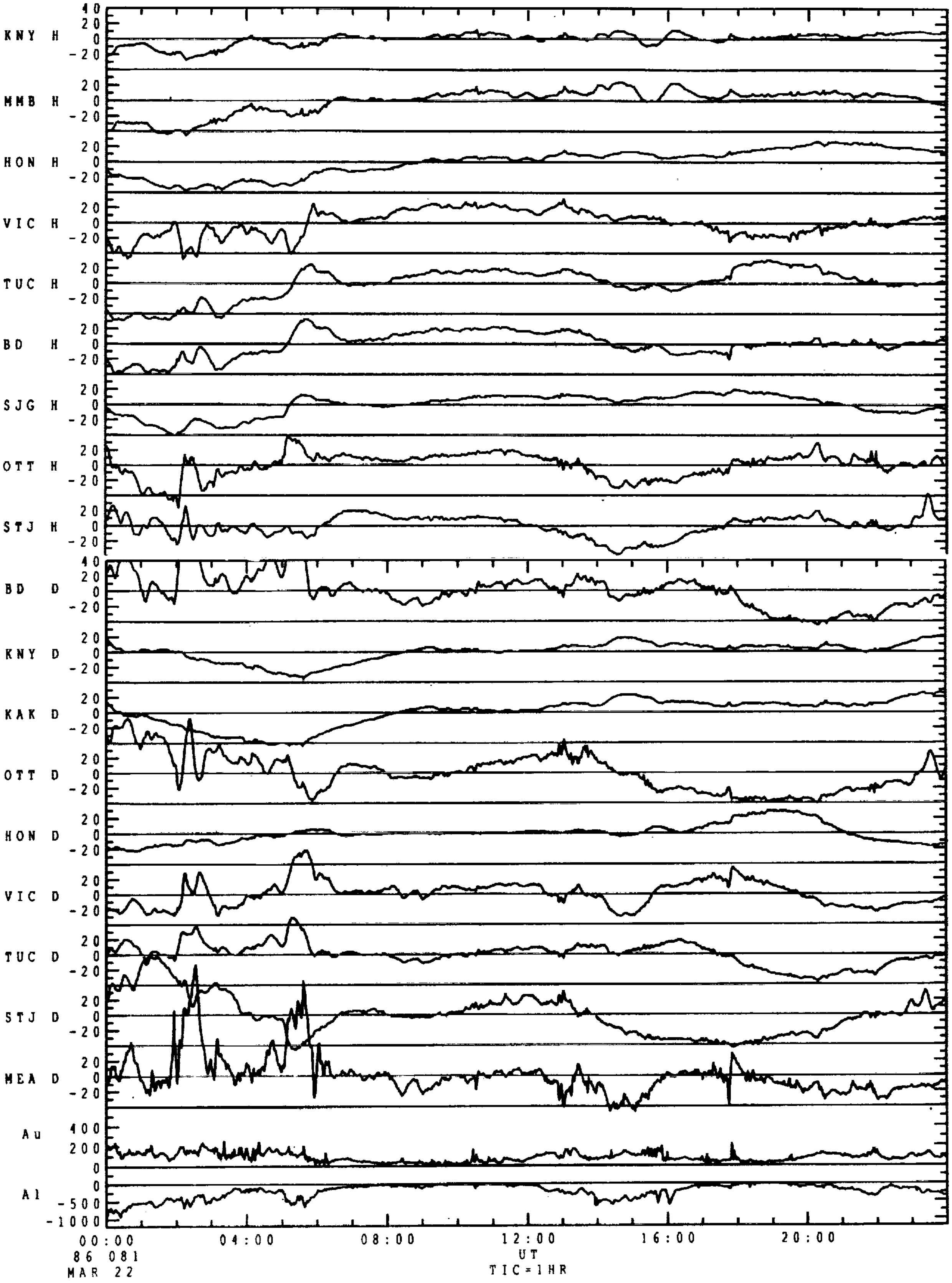

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 079
MAR 20
UT
TIC=1HR

MAR 21, 1986

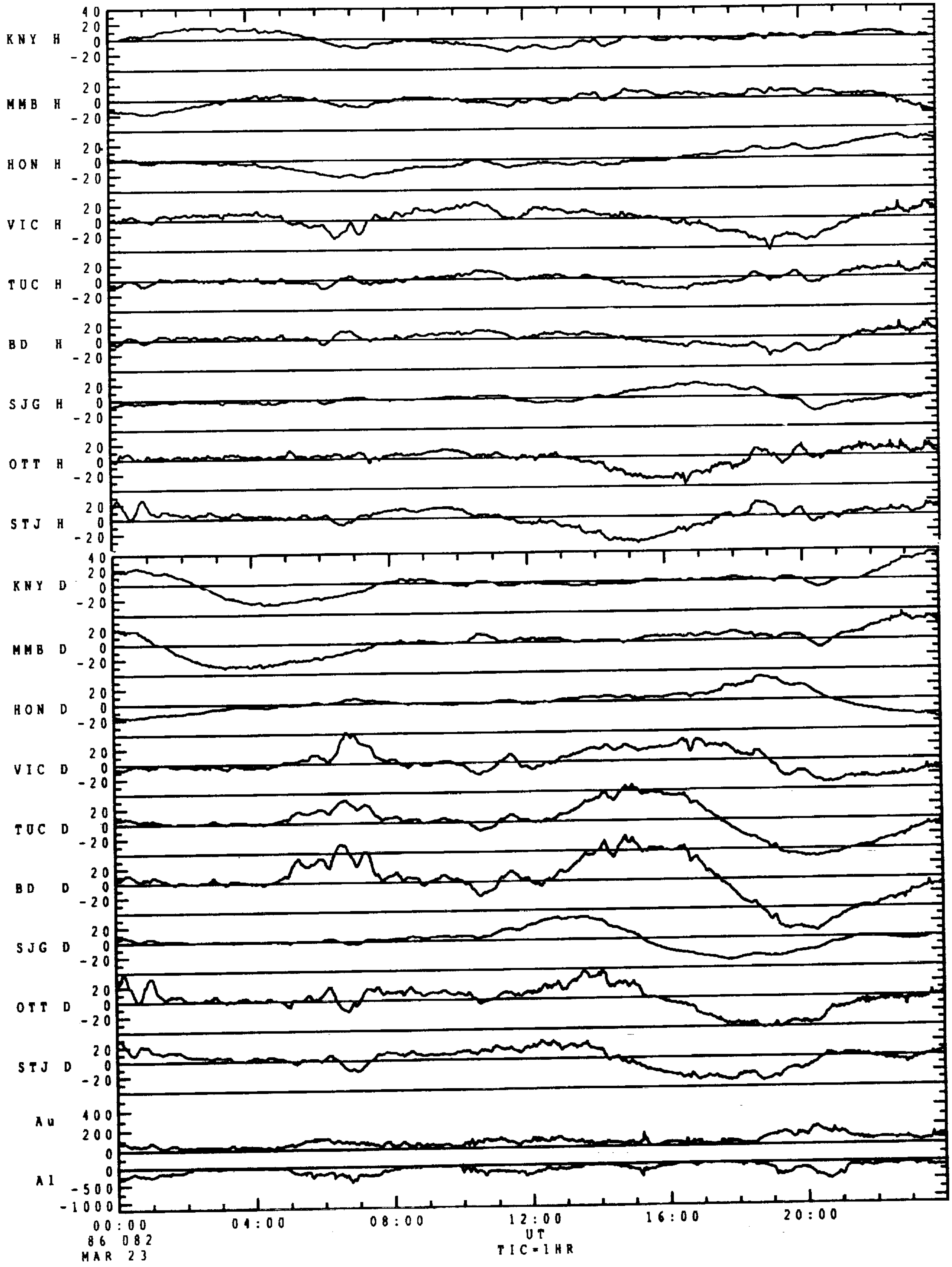

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
86 080
MAR 21
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

MAR 22, 1986

UCLA IGPP 90 JAN .5



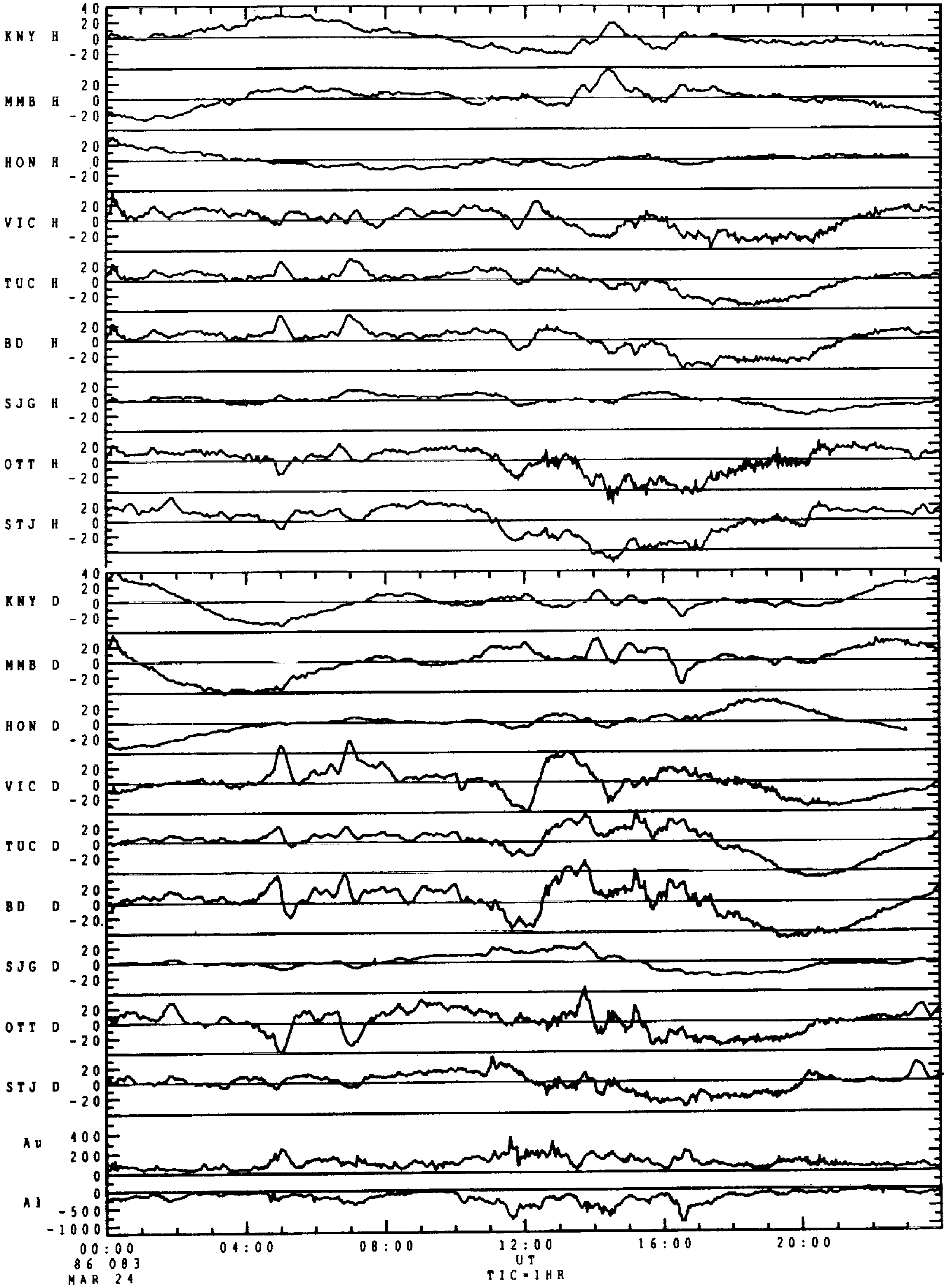
MAR 23, 1986



KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
86 082
MAR 23
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

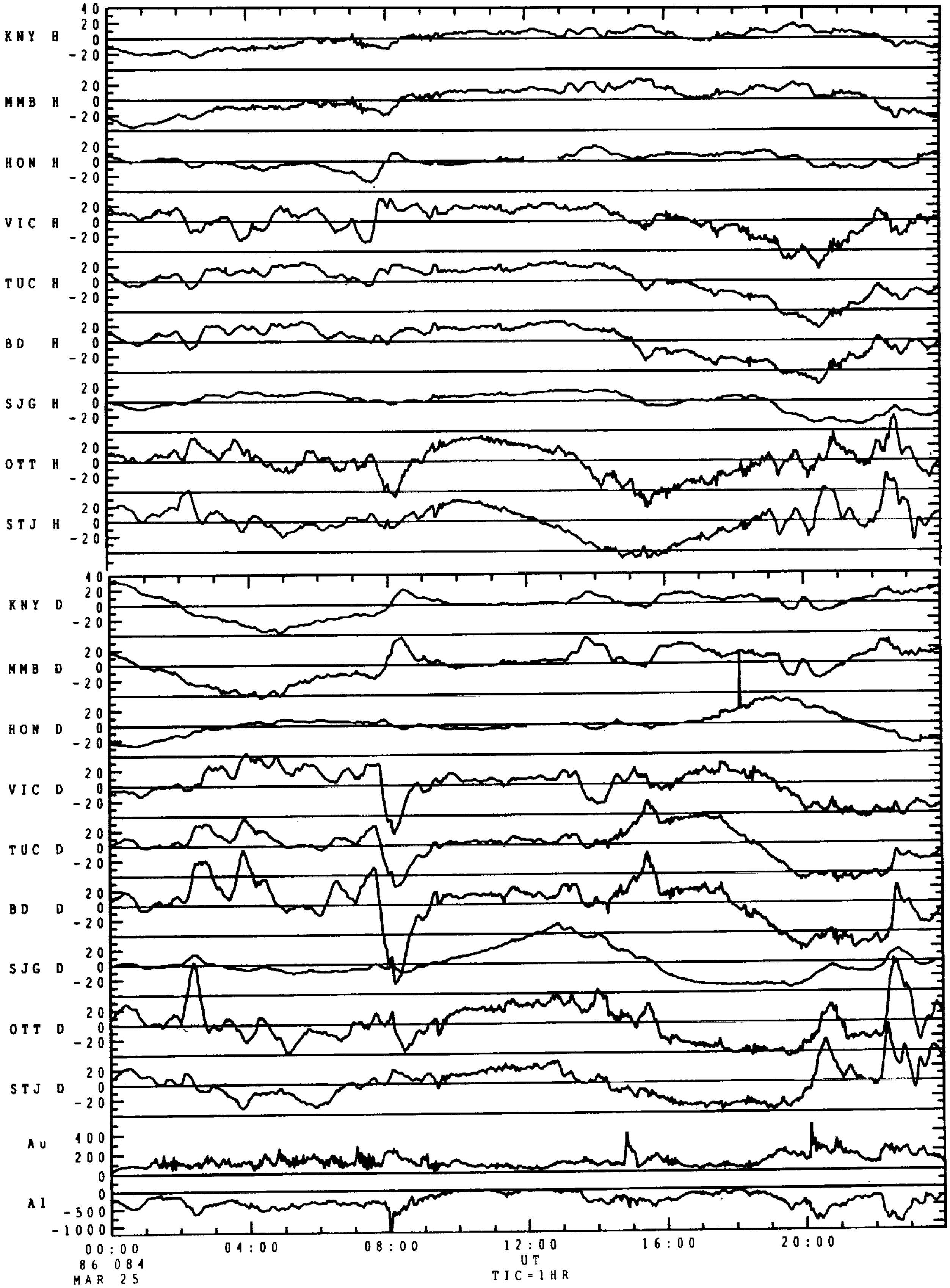
MAR 24, 1986

UCLA IGPP 90 JAN 5



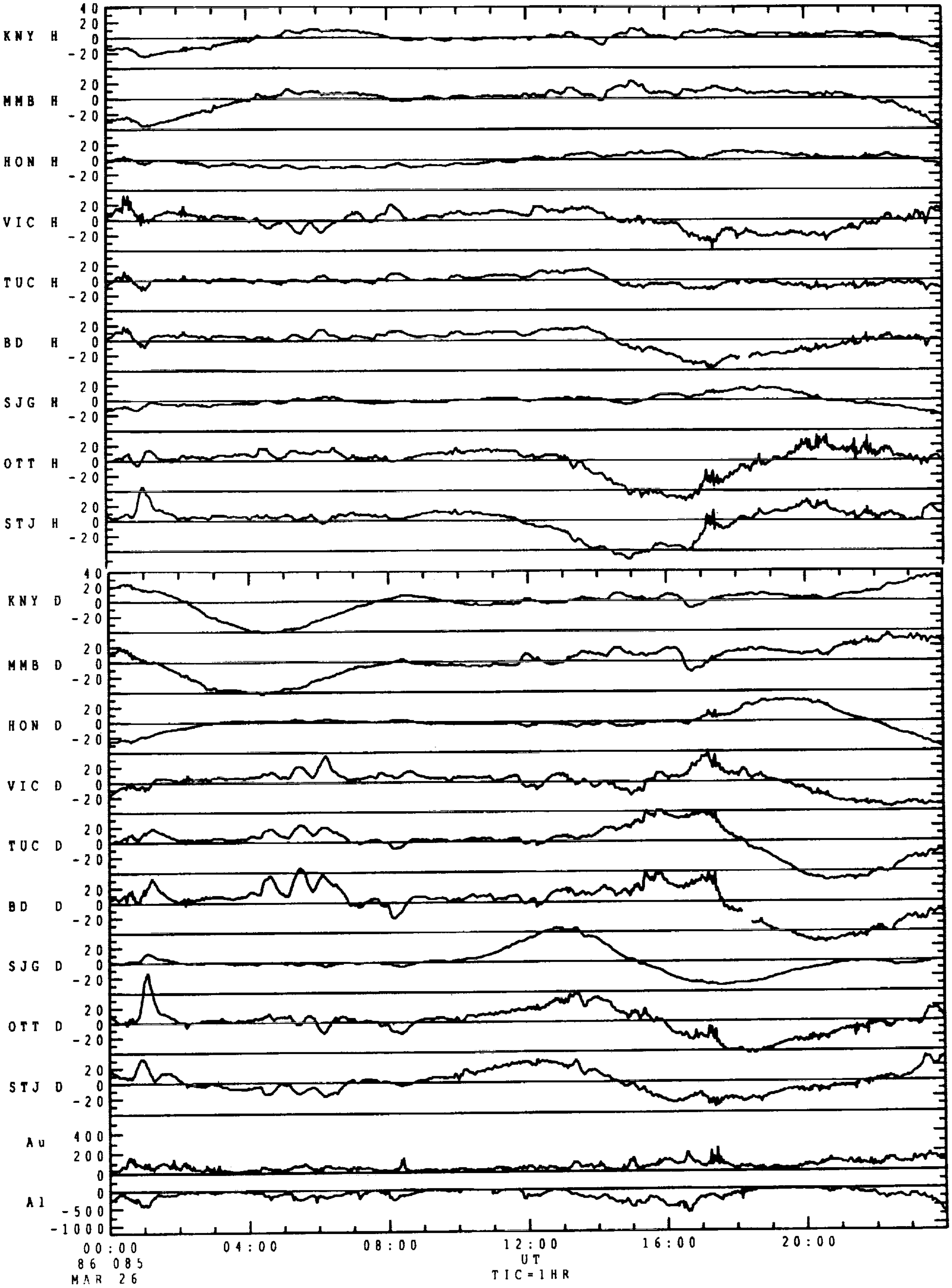
MAR 25, 1986

UCLA IGPP 90 JAN 5

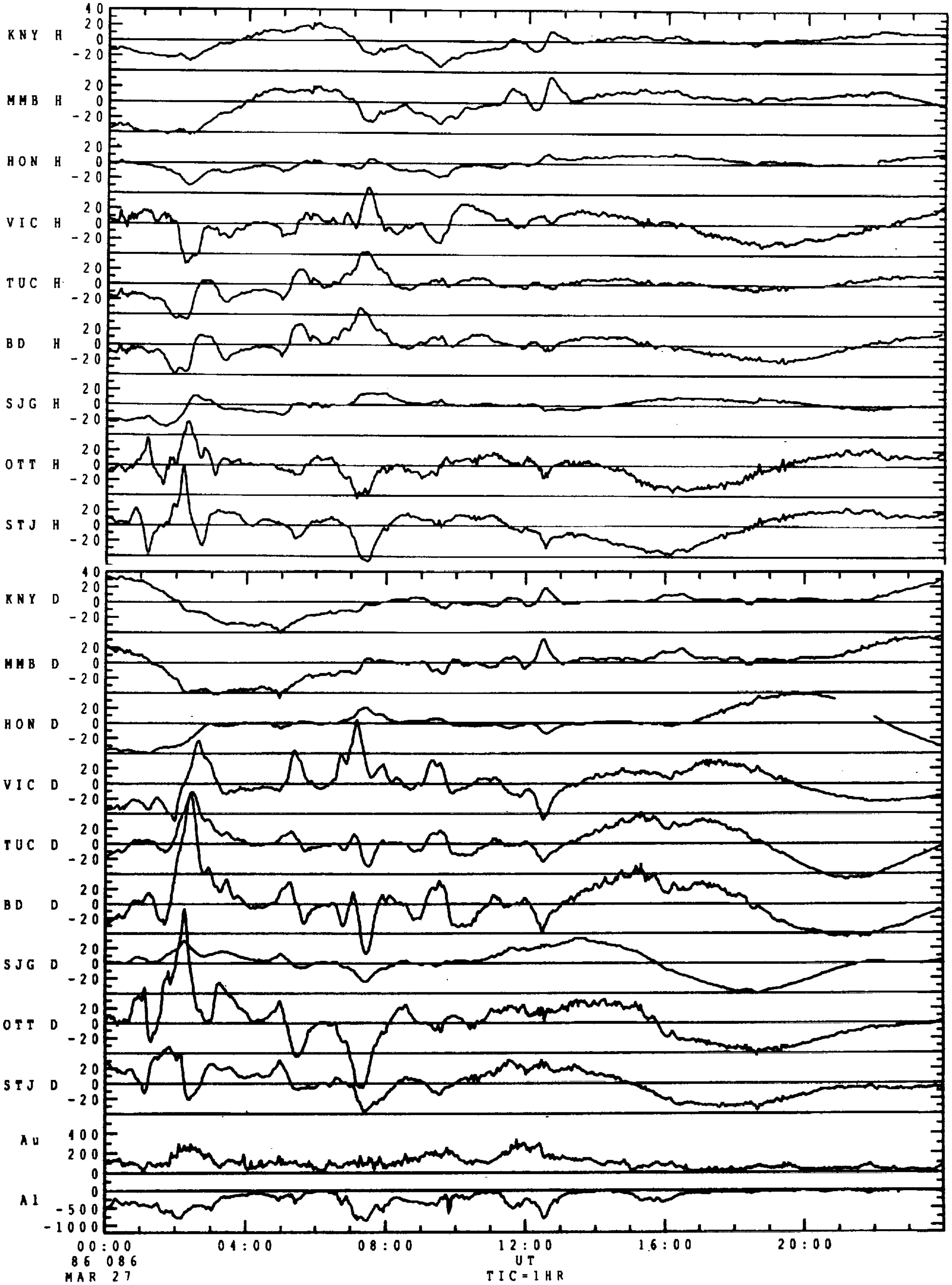


MAR 26, 1986

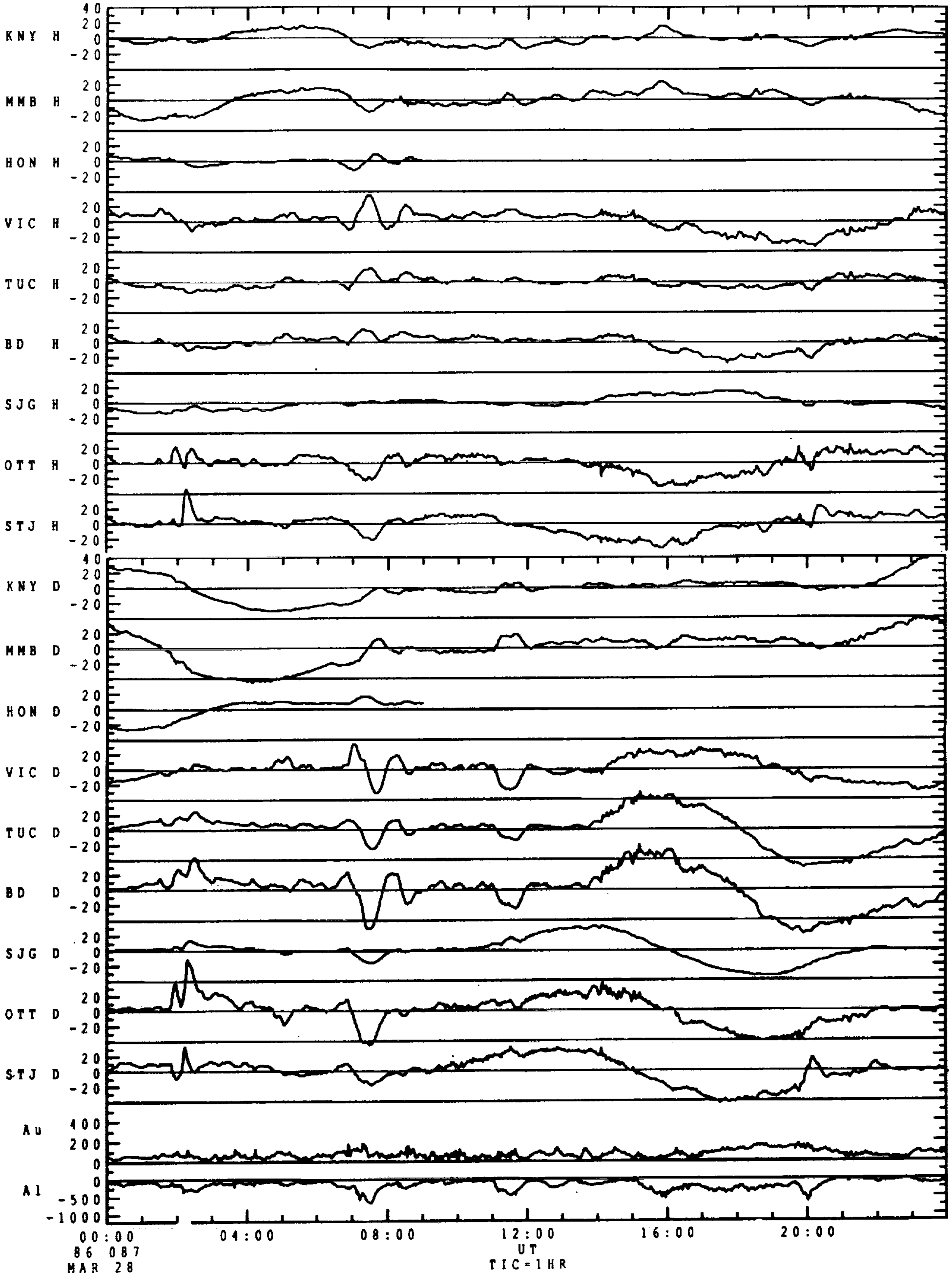
UCLA IGPP 90 JAN 5



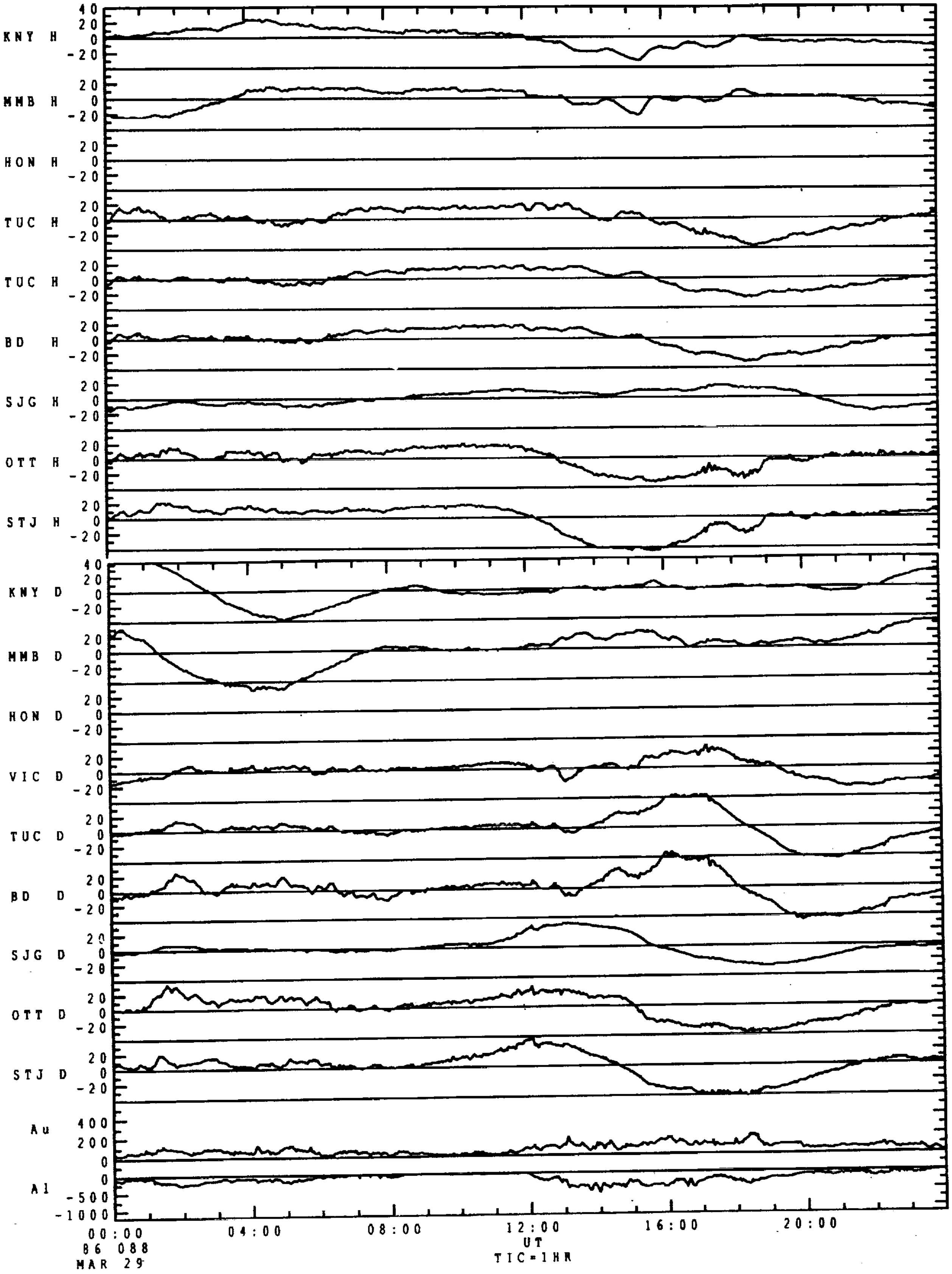
MAR 27, 1986 UCLA IGPP 90 JAN



MAR 28, 1986

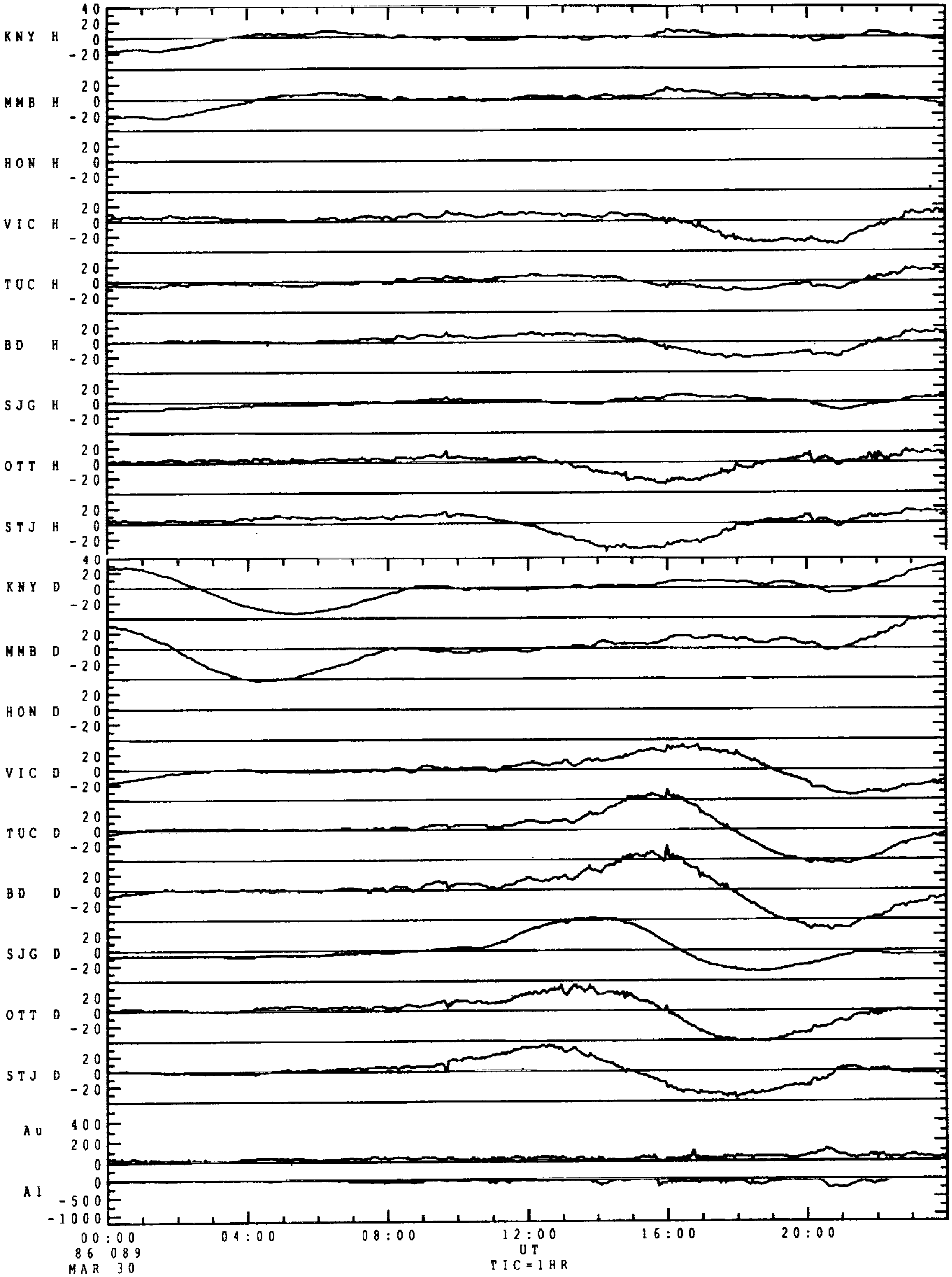

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 087
MAR 28
UT
TIC=1HR

MAR 29, 1986


KNY H
MMB H
HON H
TUC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 088
MAR 29
UT
TIC=1HR

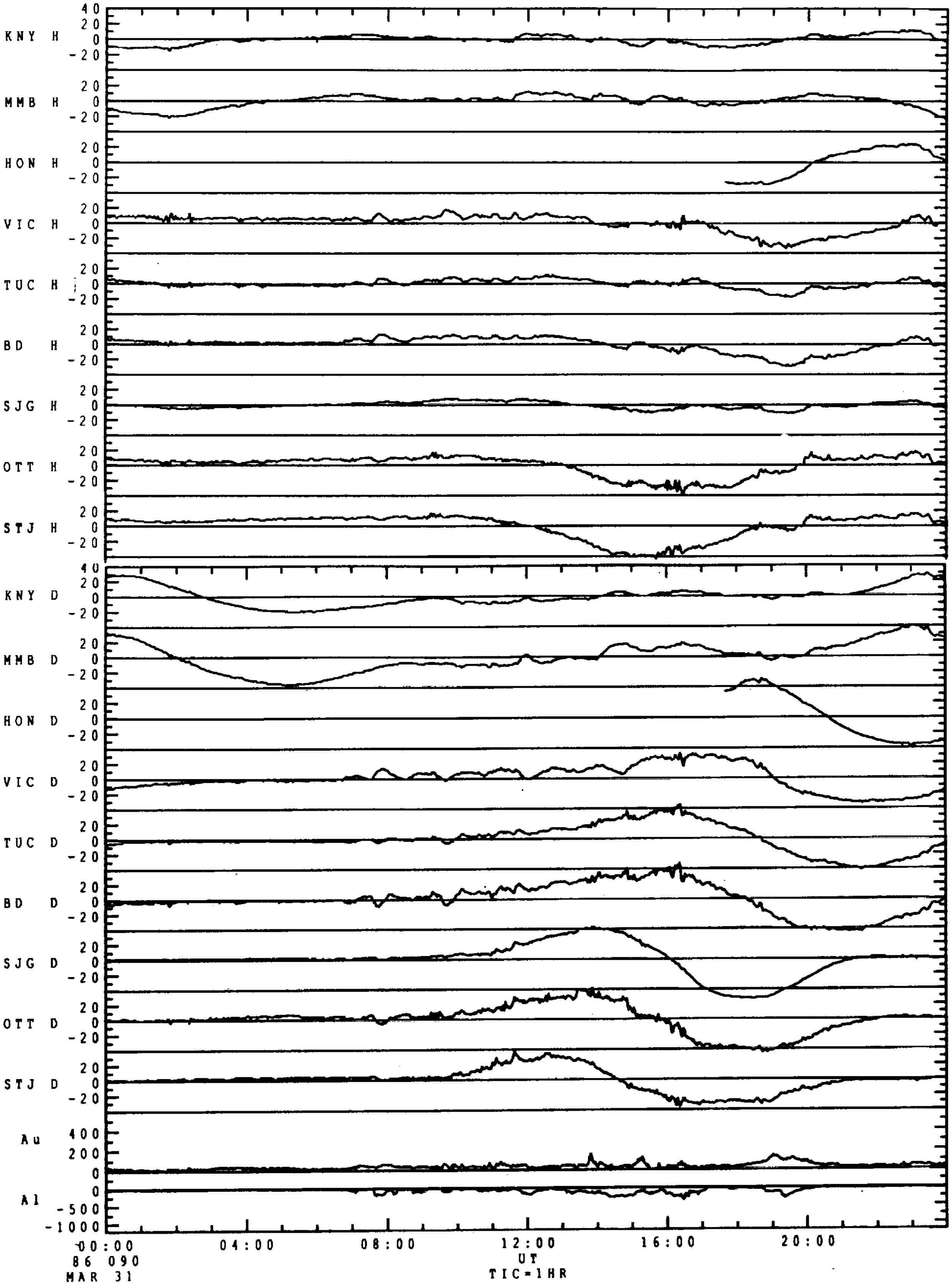
MAR 30, 1986

UCLA IGPP 90 JAN 8



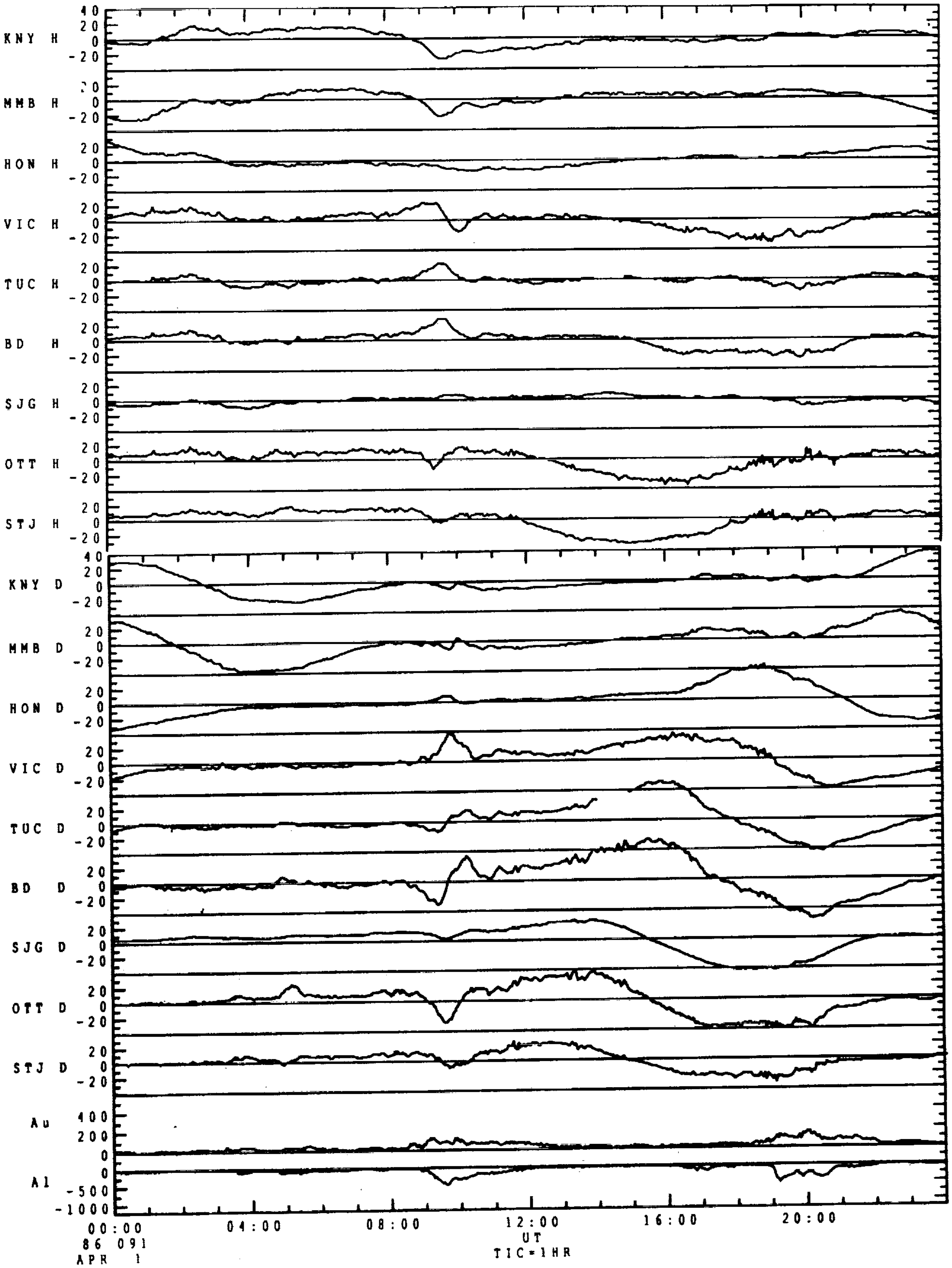
MAR 31, 1986

UCLA IGPP 90 JAN 10



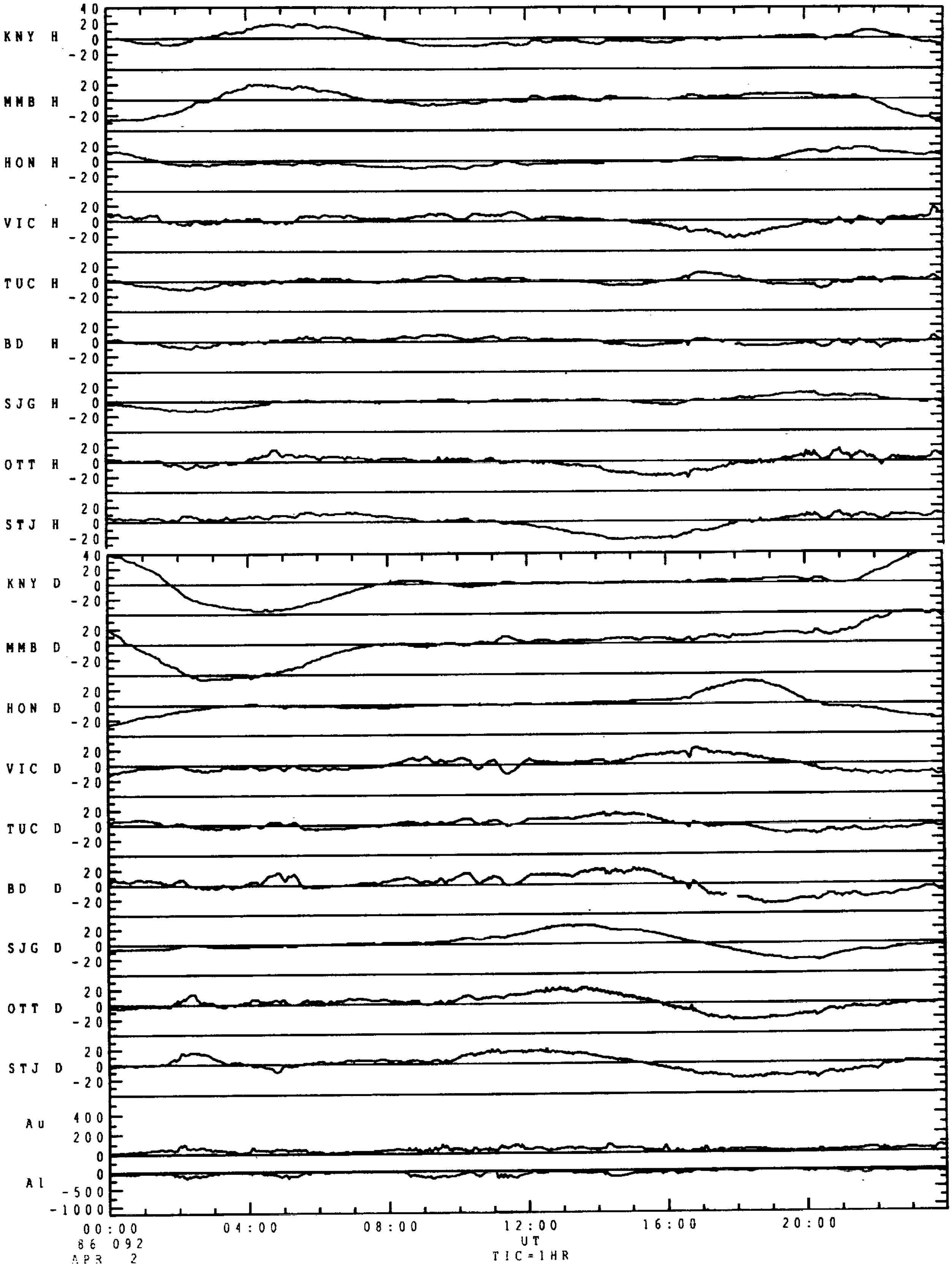
APR 01, 1986

UCLA IGPP 90 JAN 6



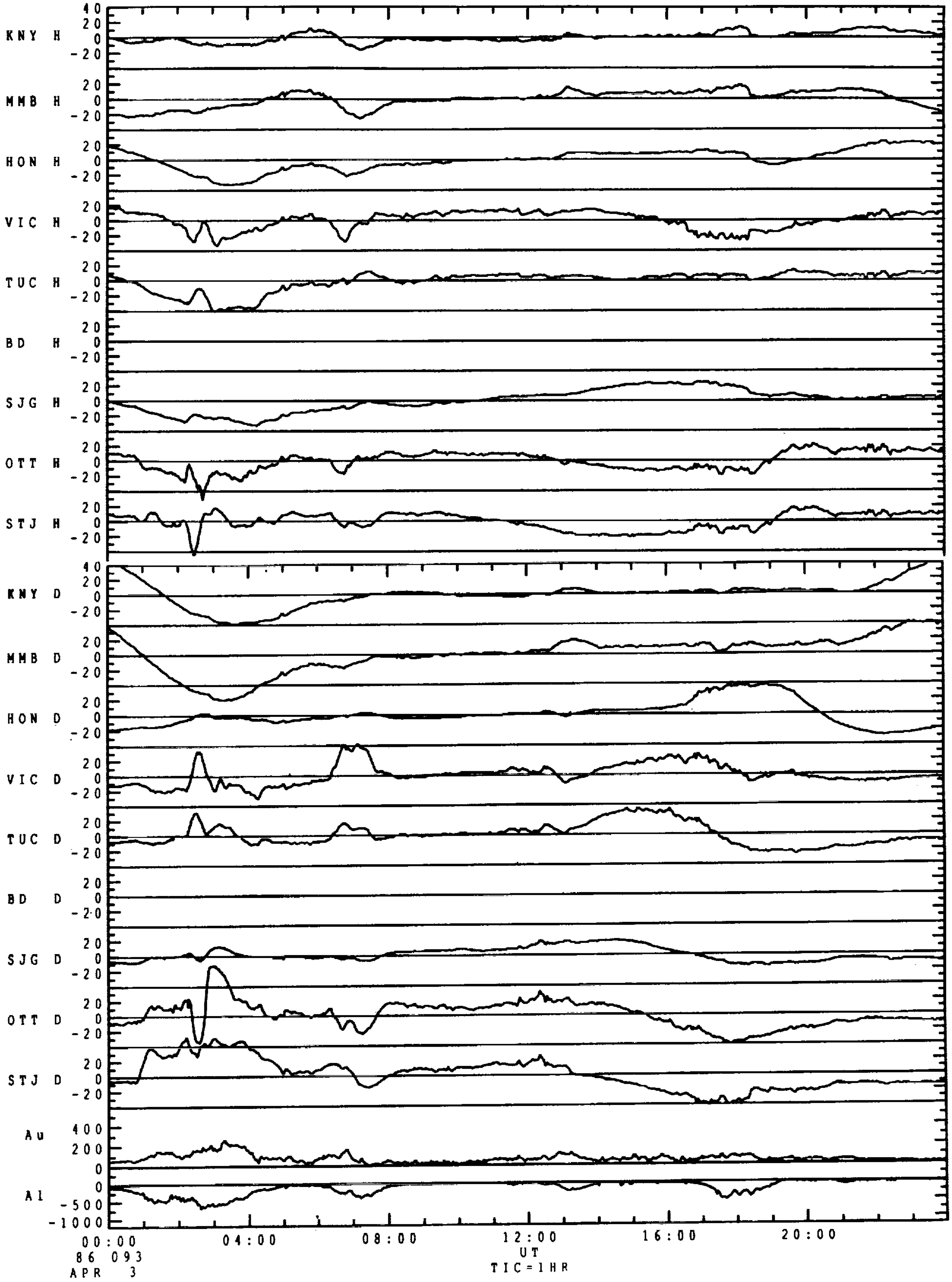
APR 02, 1986

UCLA IGPP 90 JAN



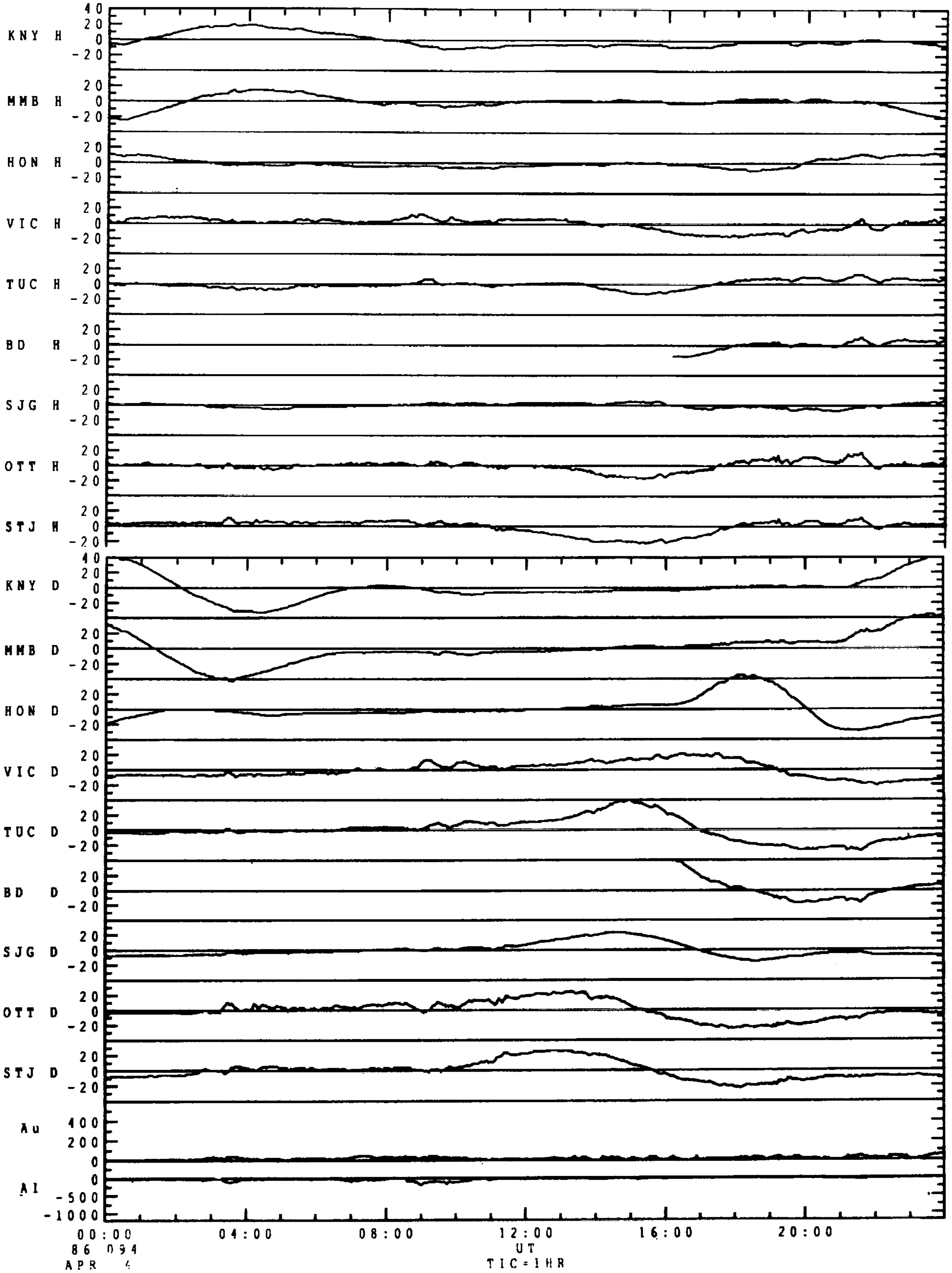
APR 03, 1986

UCLA IGPP 90 JAN 8



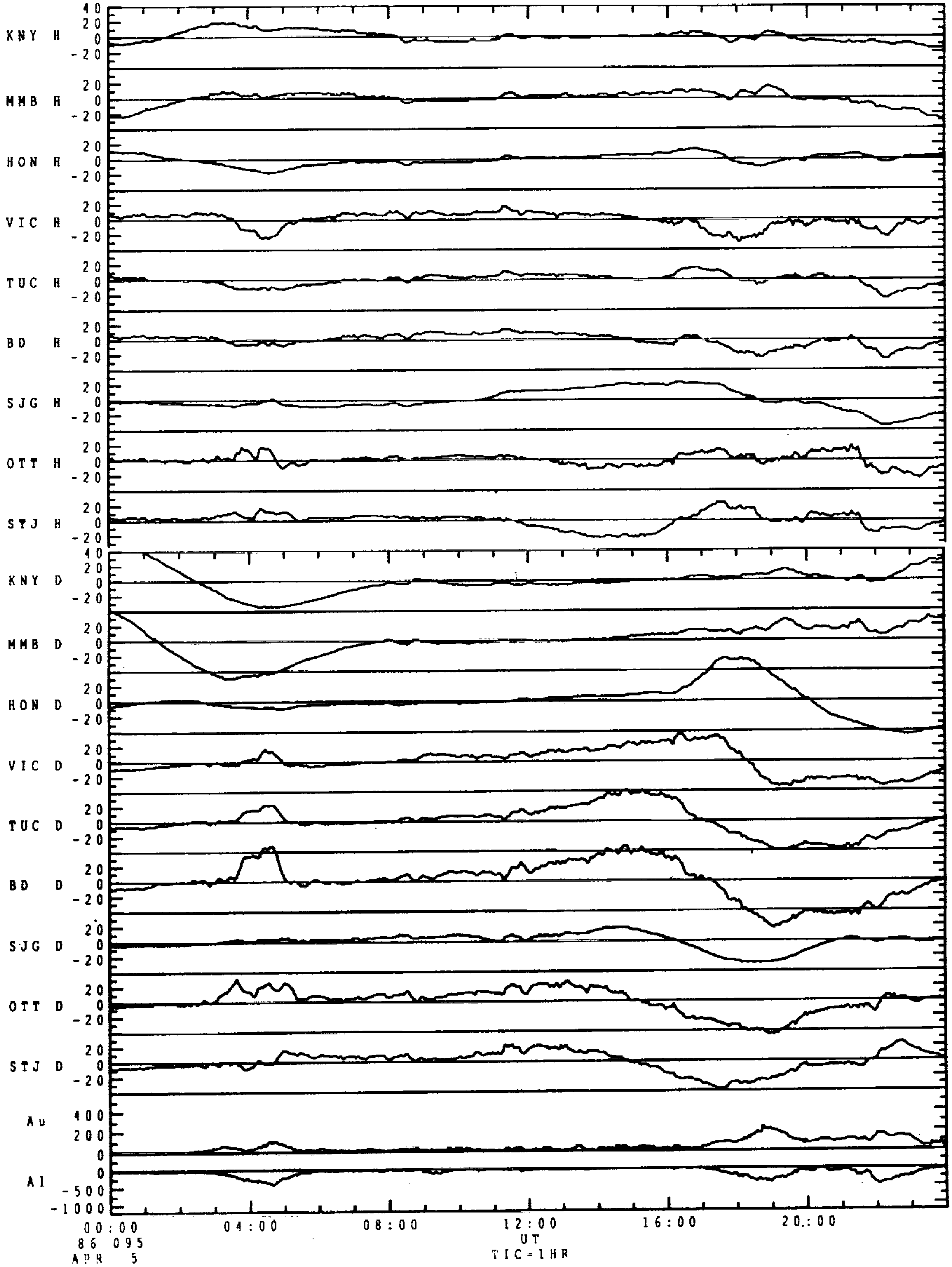
APR 04, 1986

UCLA IGPP 90 JAN

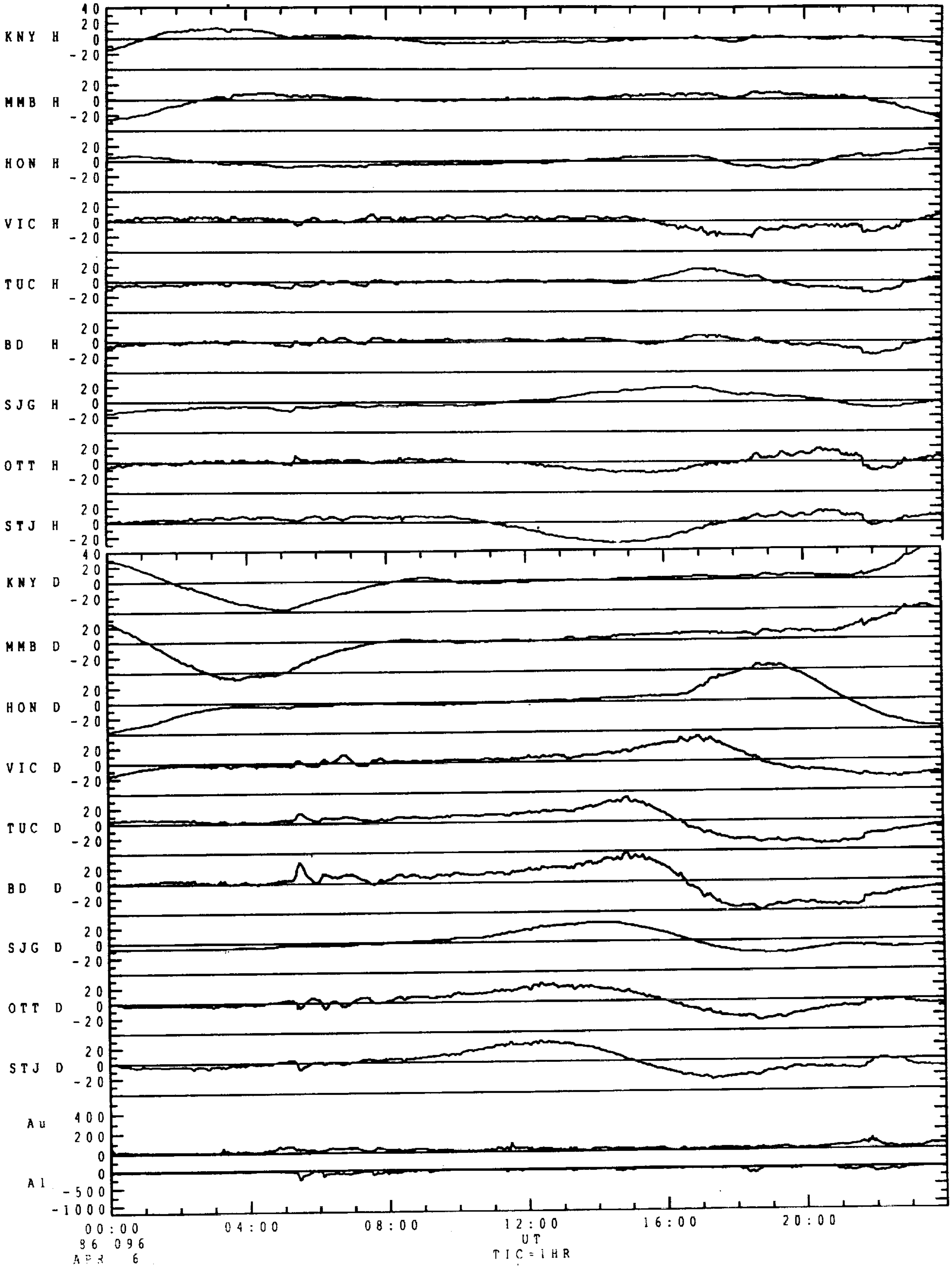


APR 05, 1986

UCLA IGPP 90 JAN 6

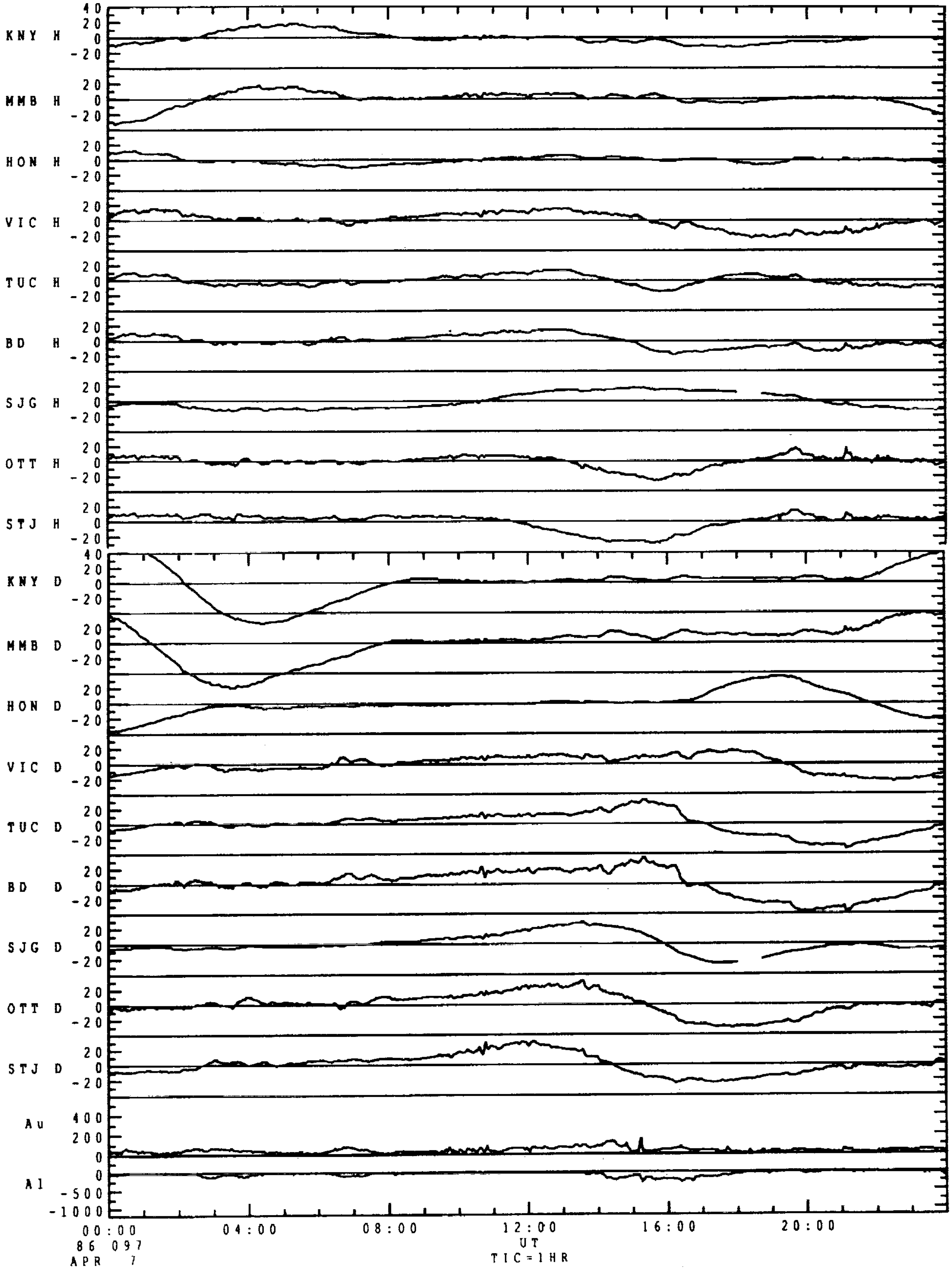


APR 06, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 096
APR 6
UT
TIC=1HR

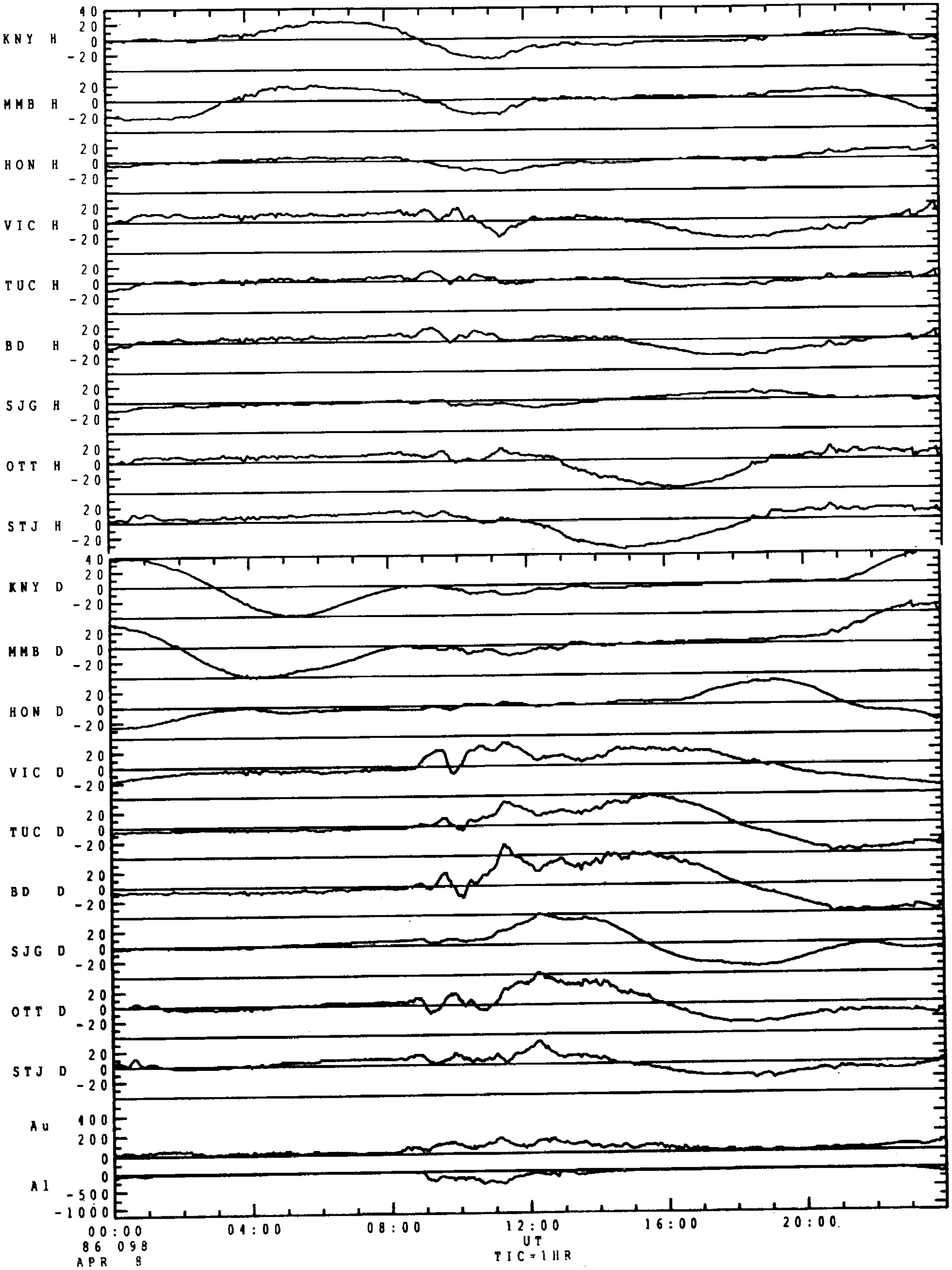
APR 07, 1986

UCLA IGPP 90 JAN 5



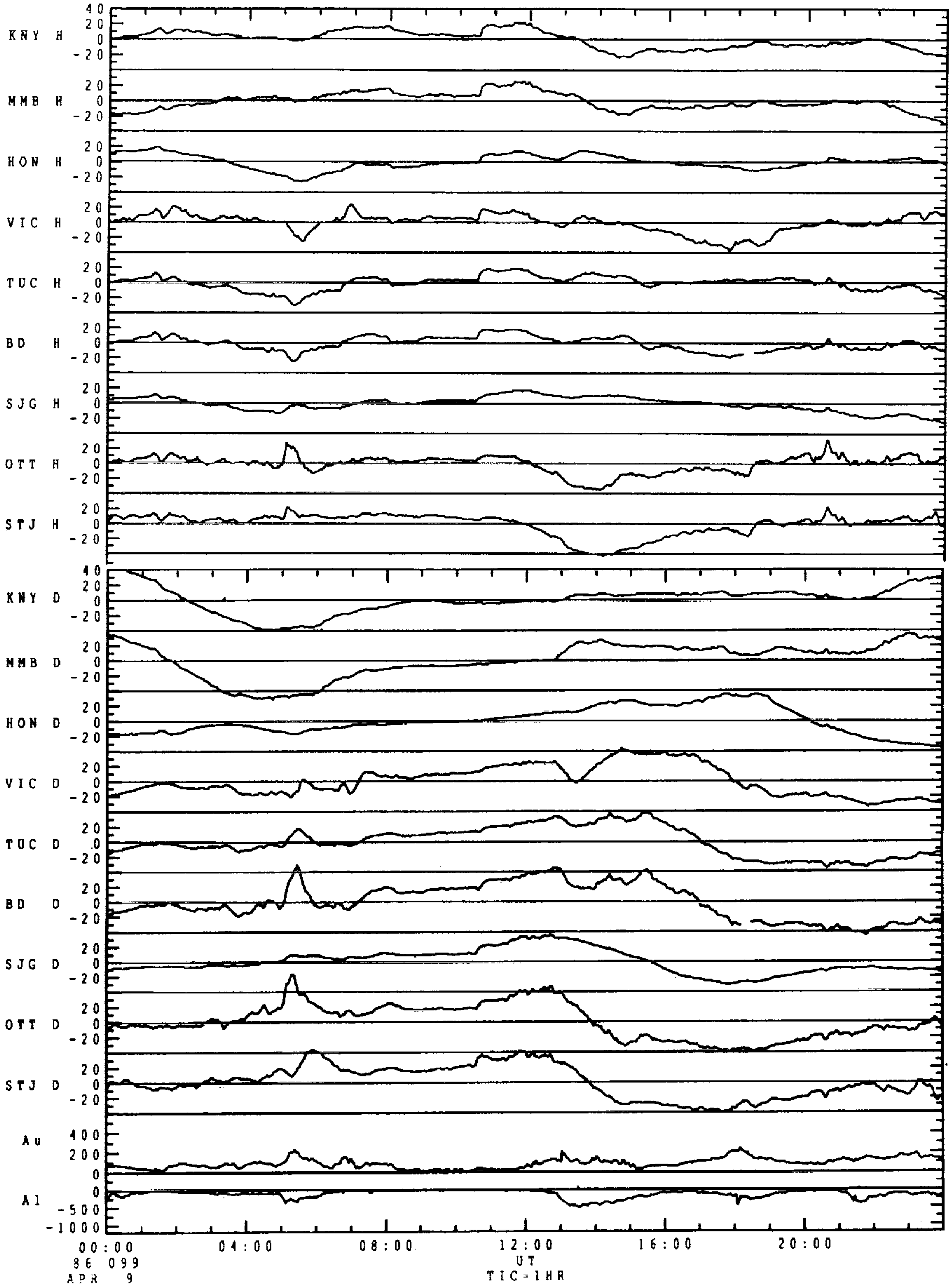
APR 08, 1986

UCLA IGPP 90 JAN 6



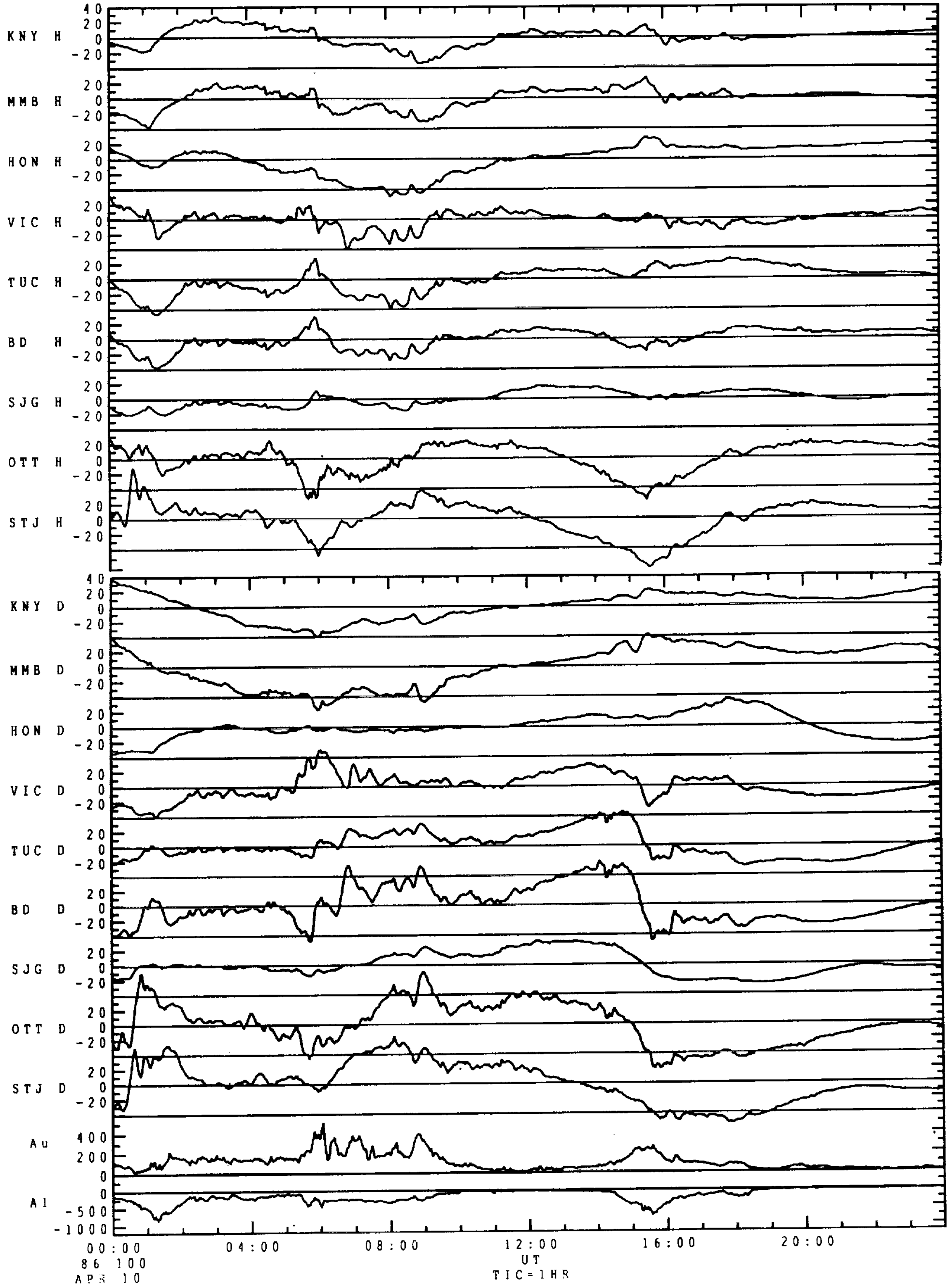
APR 09, 1986

UCLA IGPP 90 JAN 6



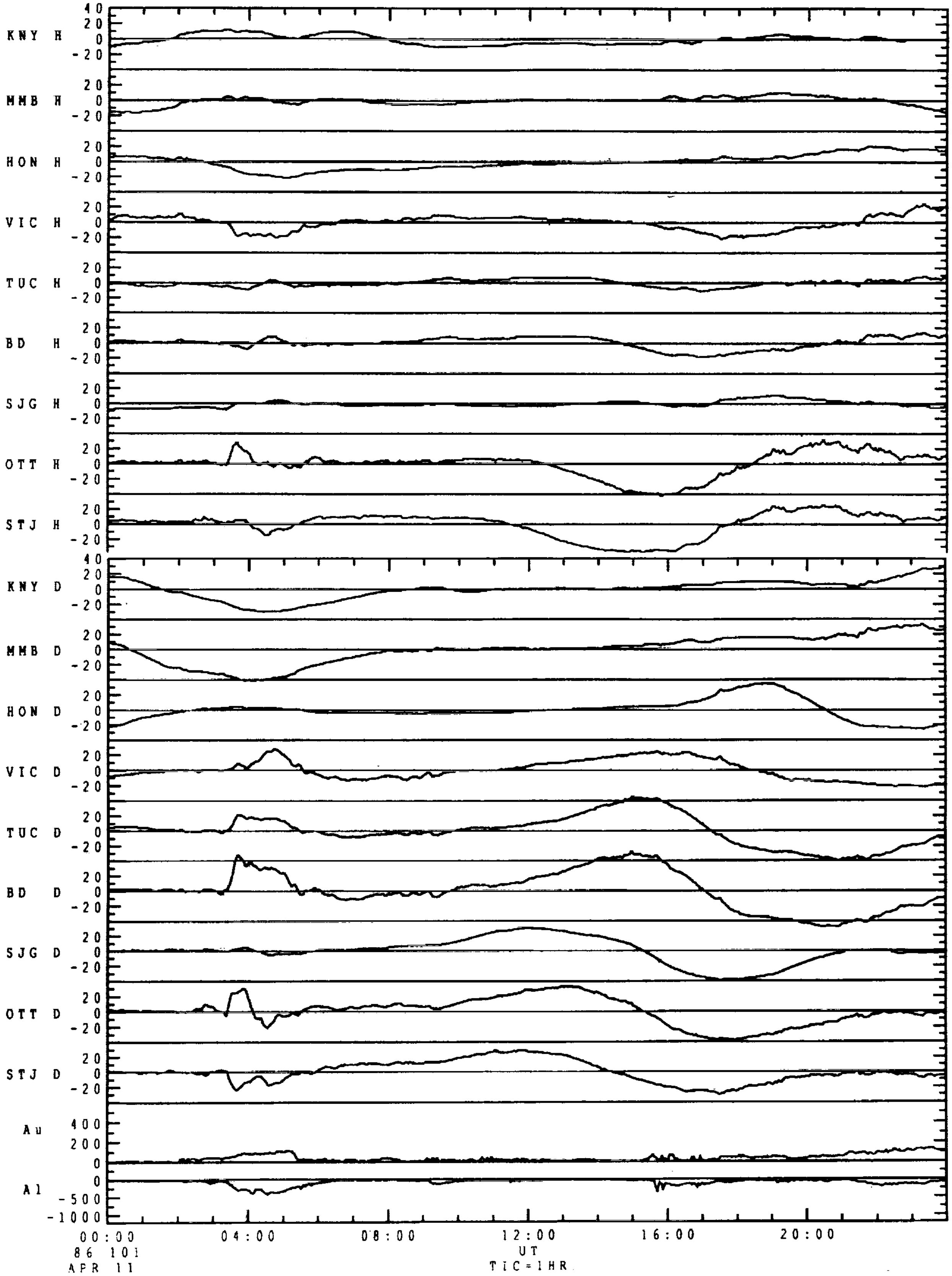
APR 10, 1986

UCLA IGPP 90 JAN 5

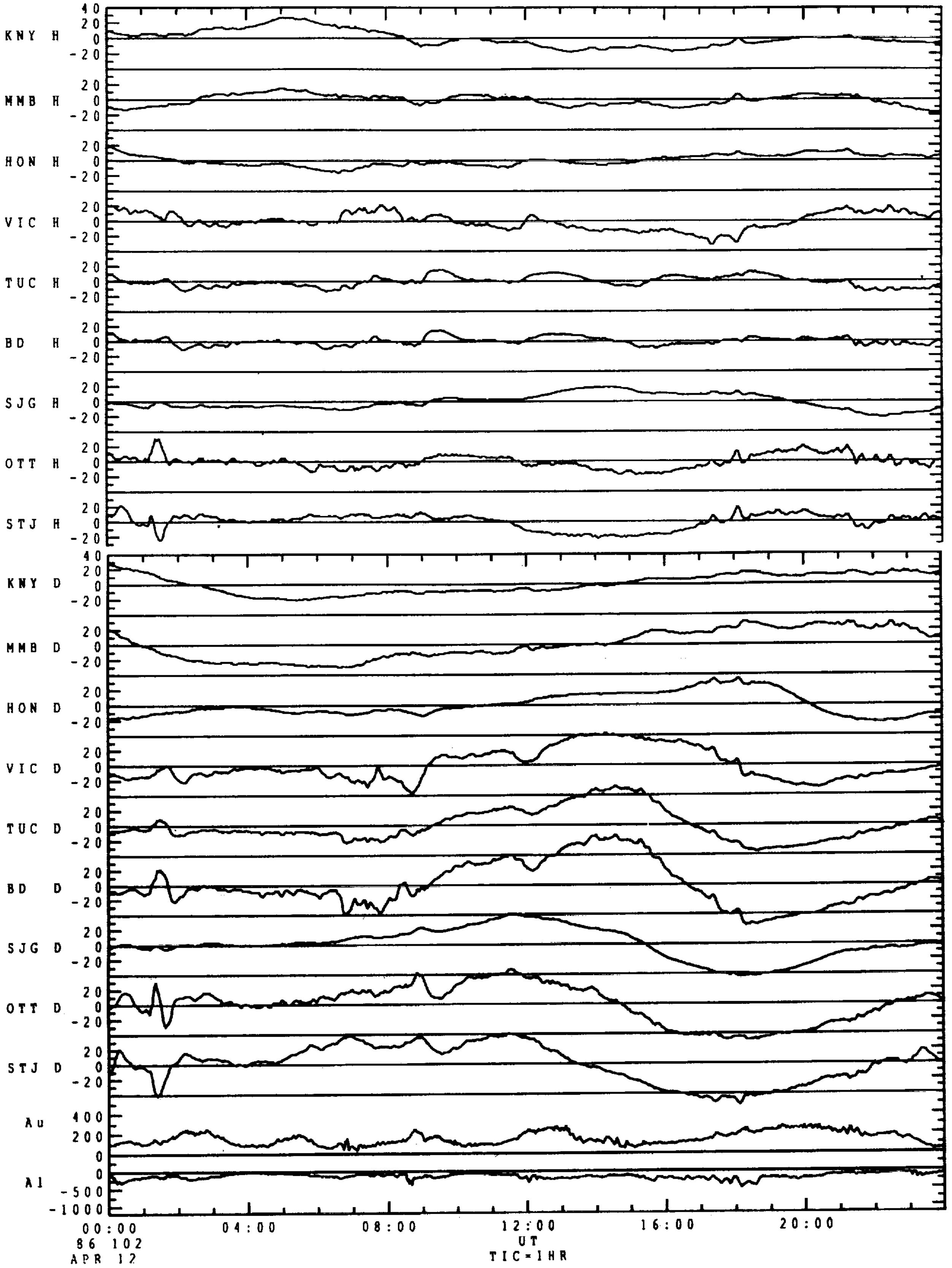


APR 11, 1986

UCLA IGPP 90 JAN 6

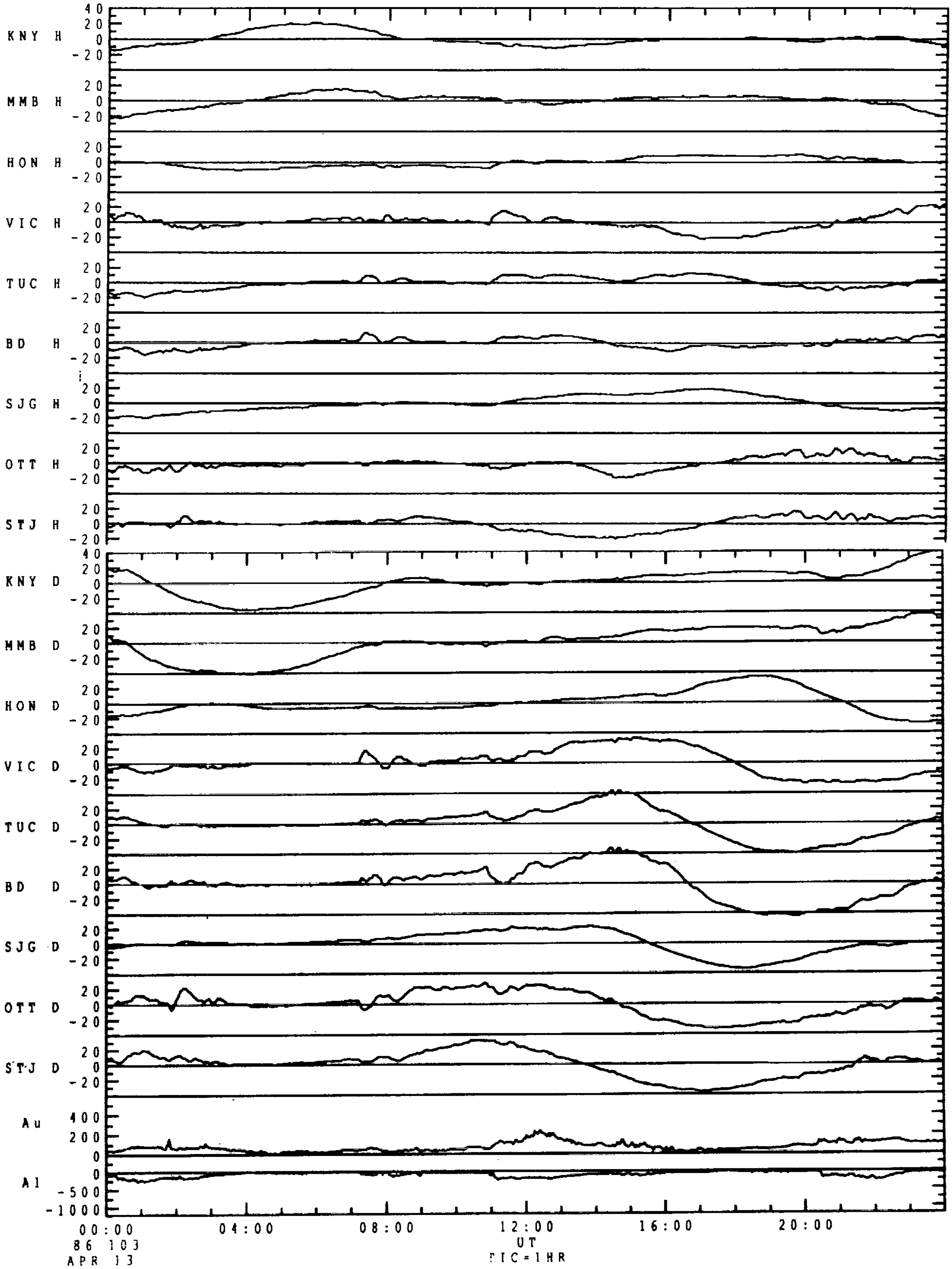


APR 12, 1986


KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
86 102
APR 12
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

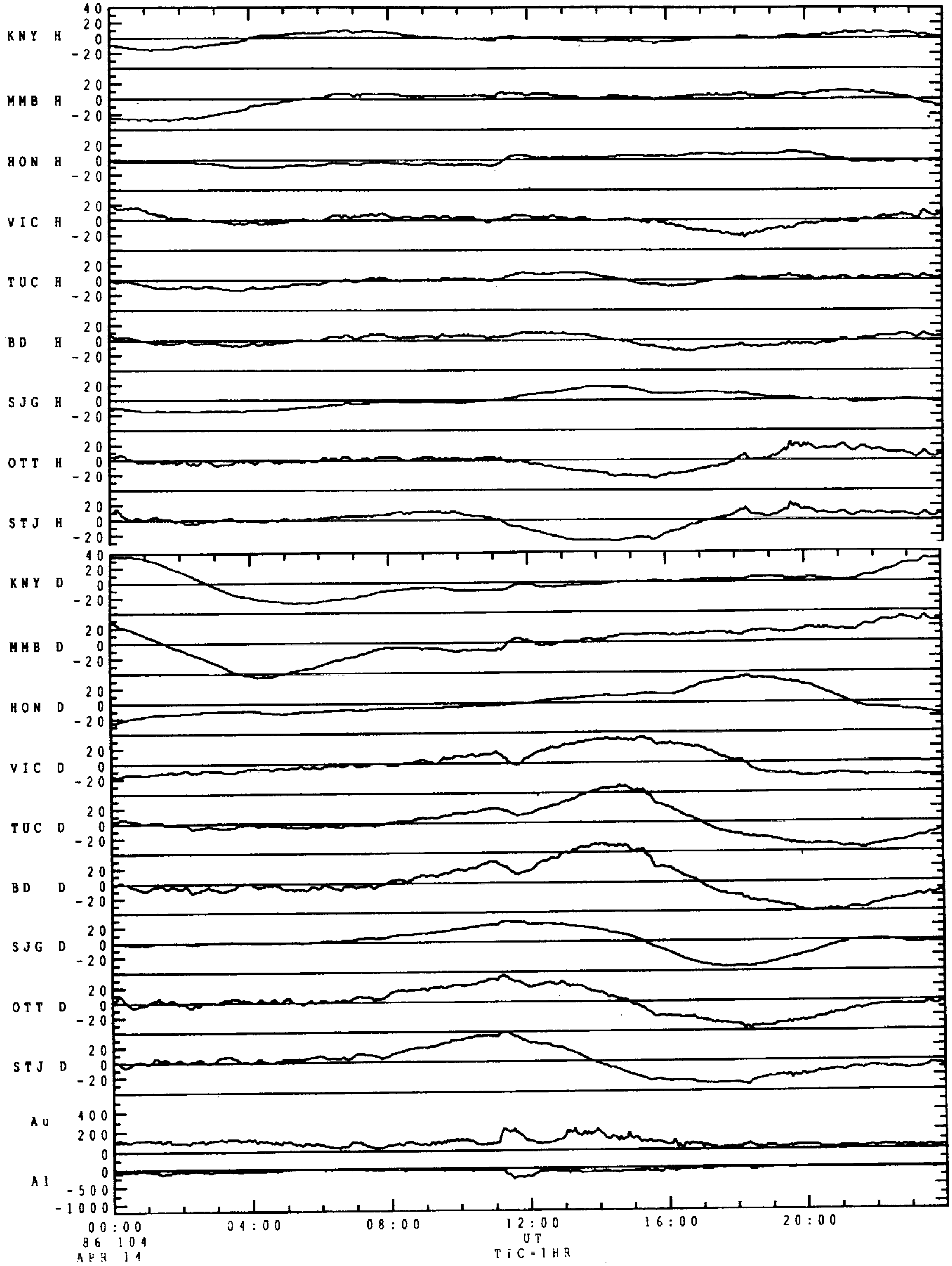
APR 13, 1986

UCLA IGPP 90 JAN



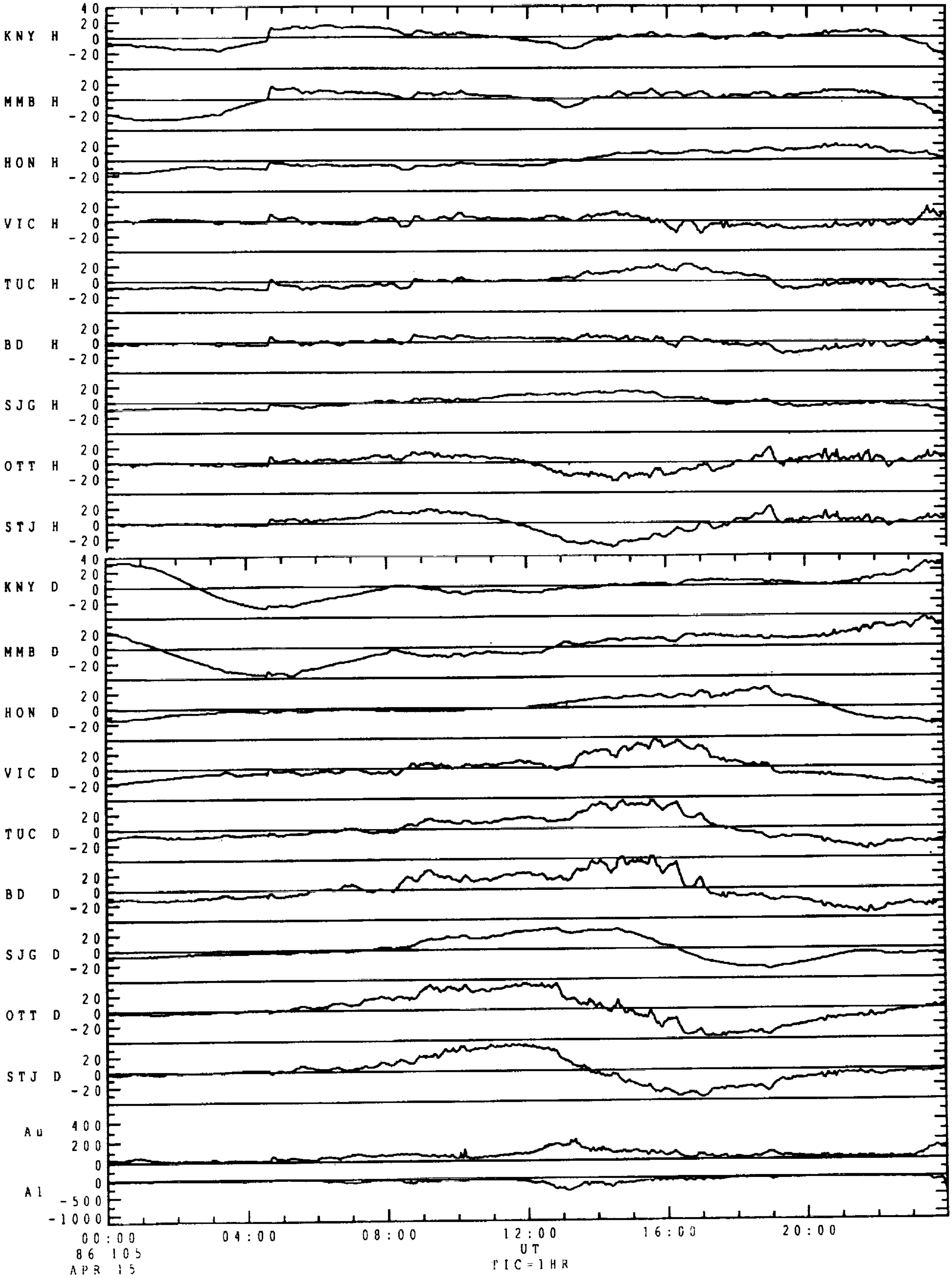
APR 14, 1986

UCLA IGPP 90 JAN 6

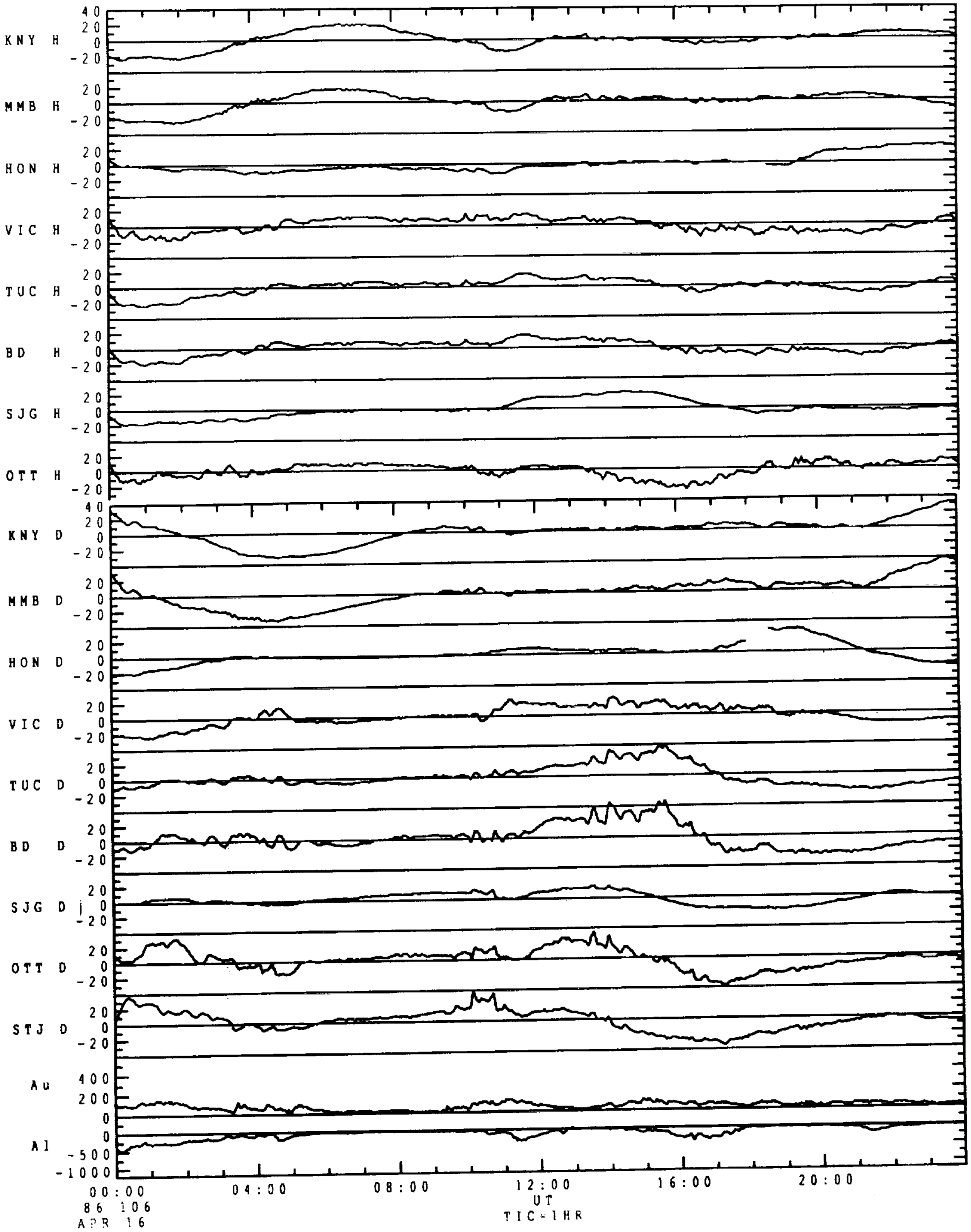


APR 15, 1986

UCLA IGPP 90 JAN 6

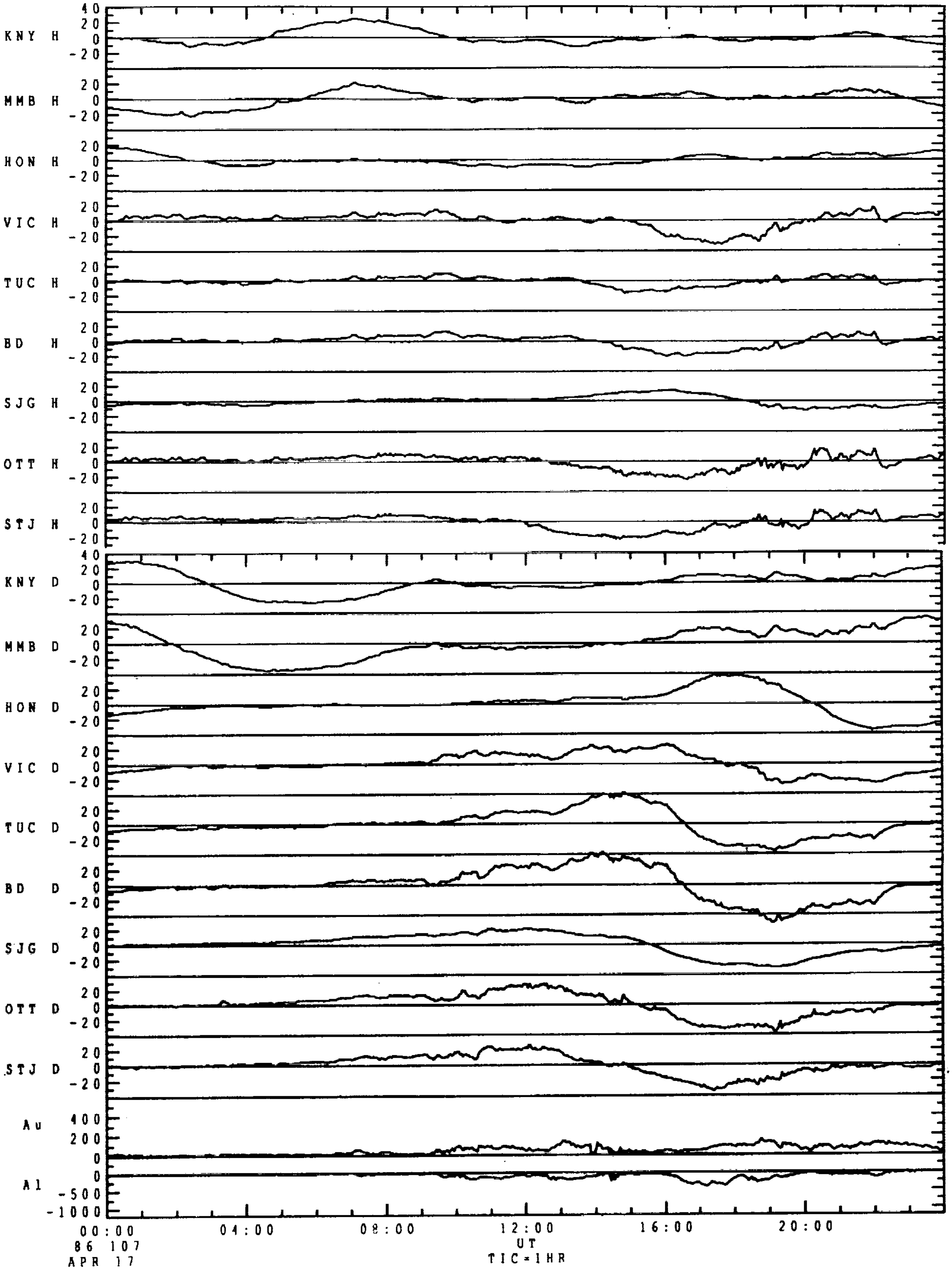


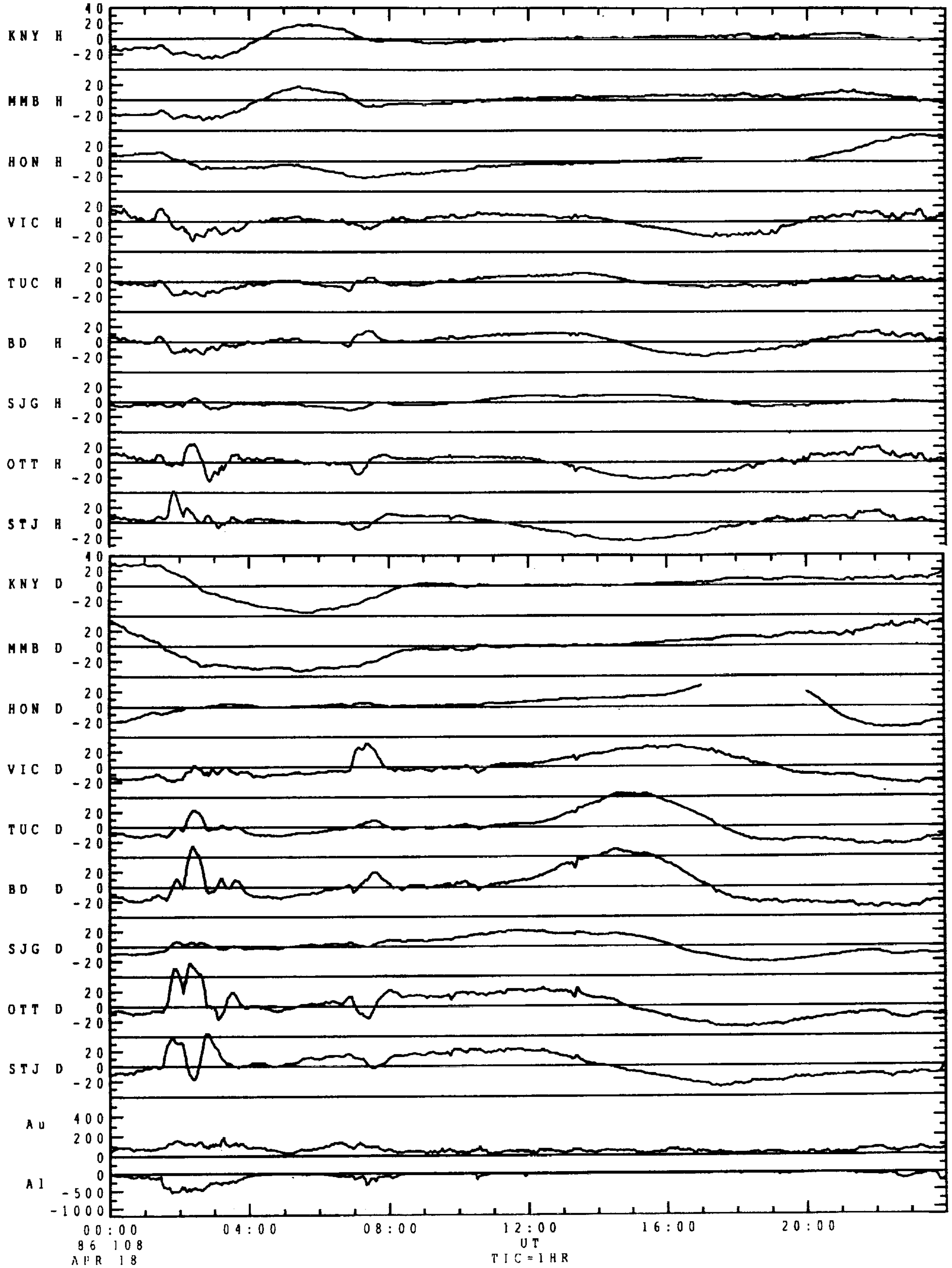
APR 16, 1986


KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
86 106
APR 16
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

APR 17, 1986

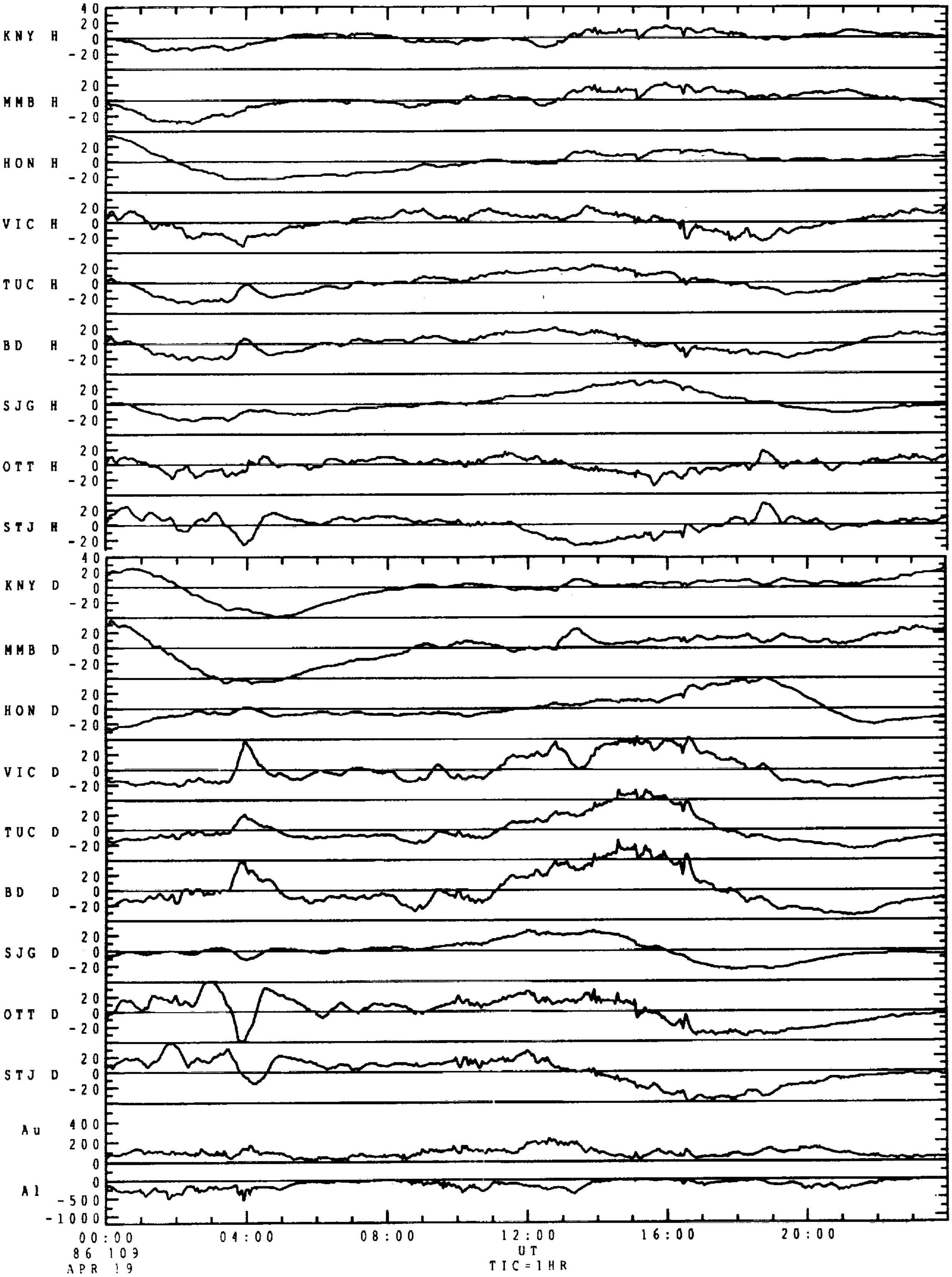
UCLA IGPP 90 JAN 6



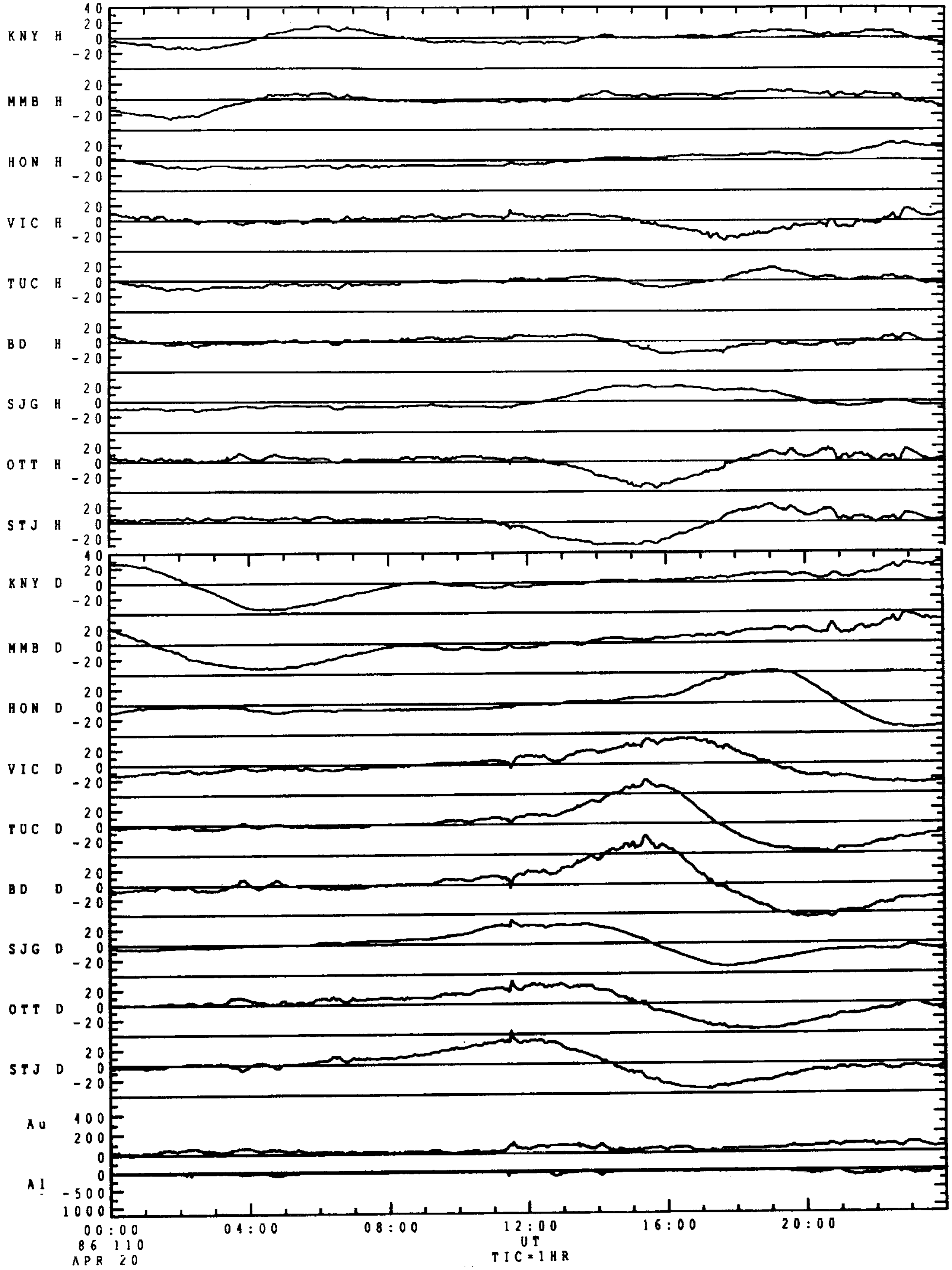

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 108
APR 18
UT
TIC=1HR

APR 19, 1986

UCLA IGPP 90 JAN 6

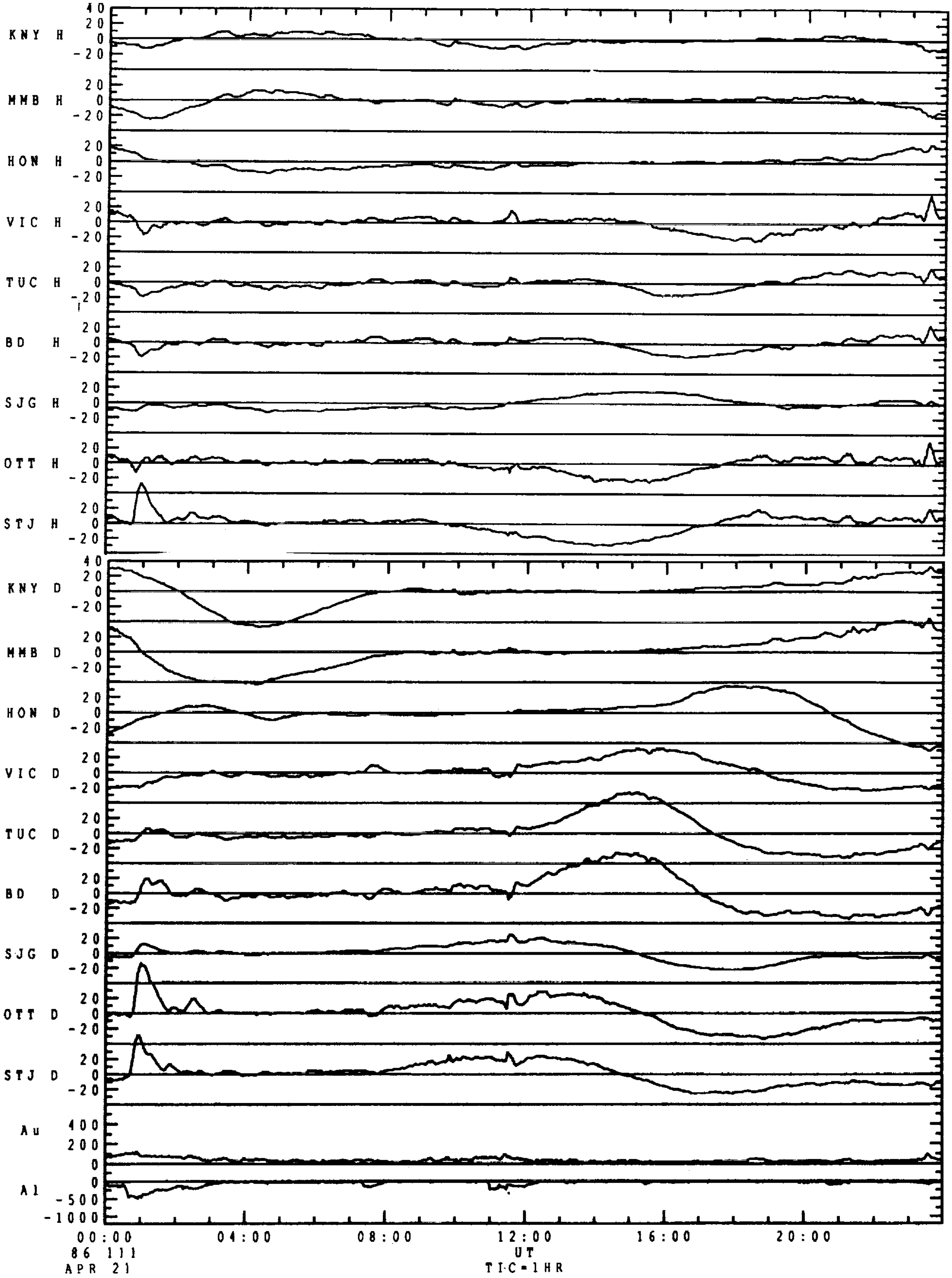


APR 20, 1986

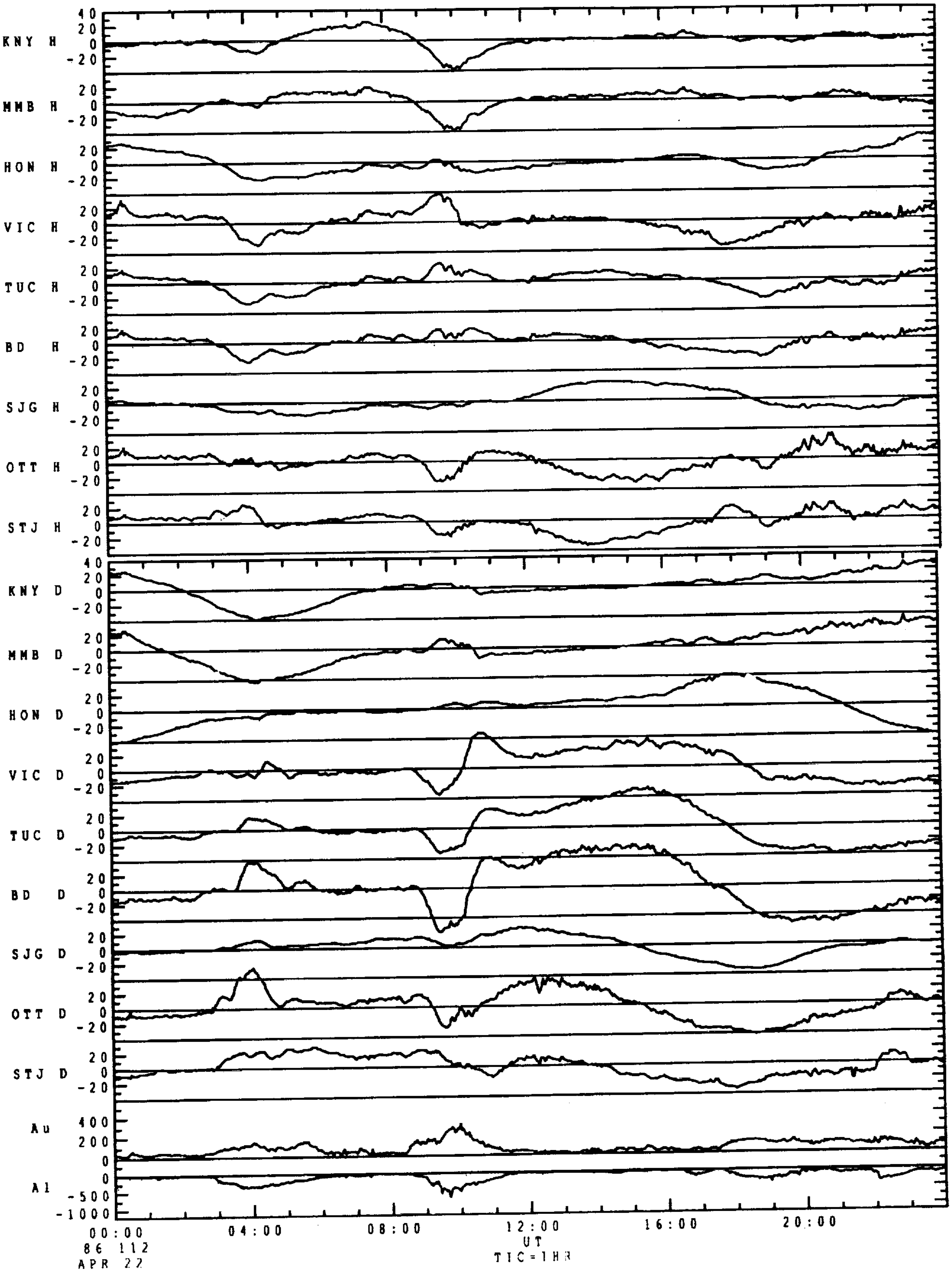

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
1000
00:00
86 110
APR 20
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

APR 21, 1986

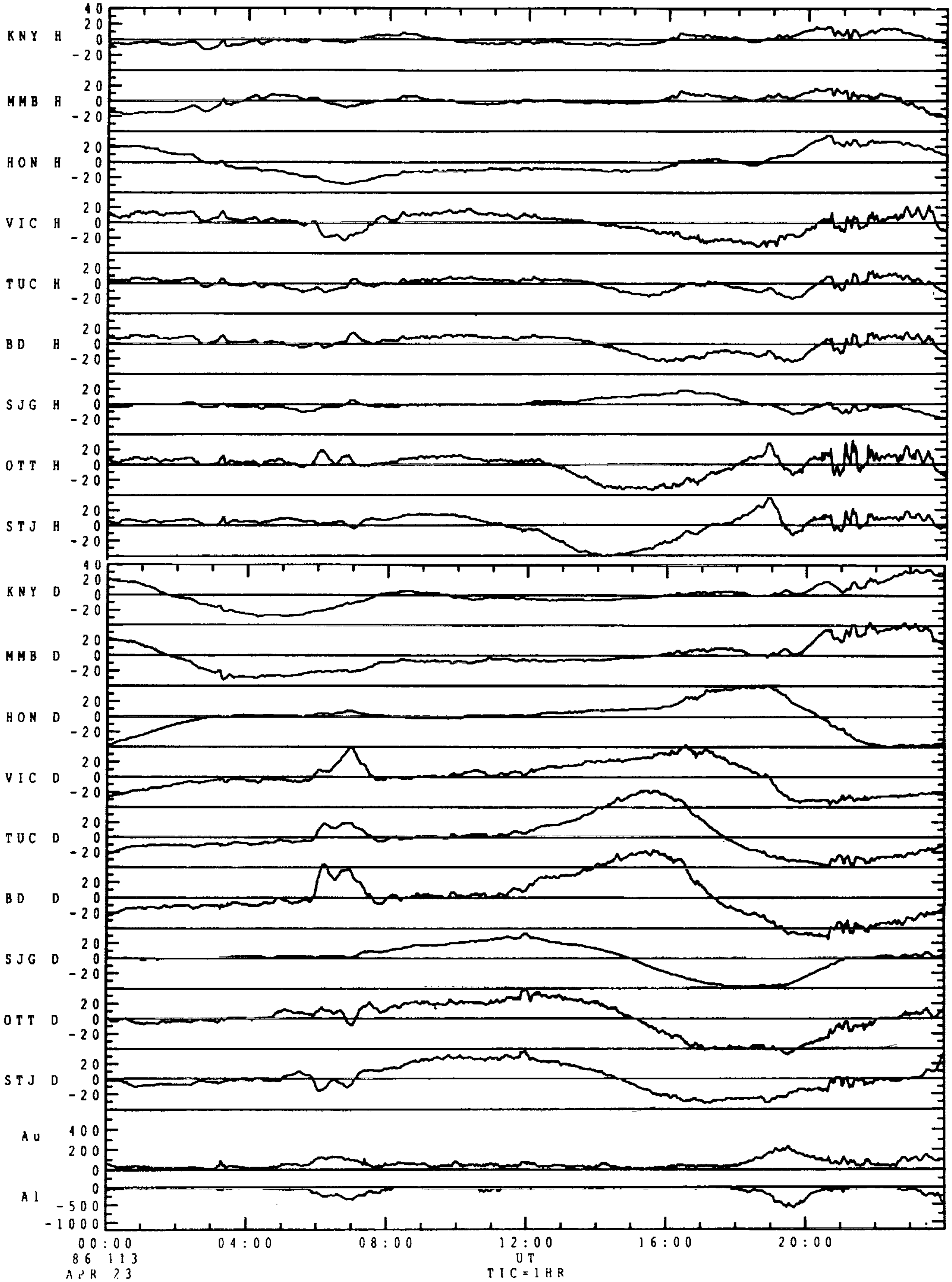
UCLA IGPP 90 JAN 6



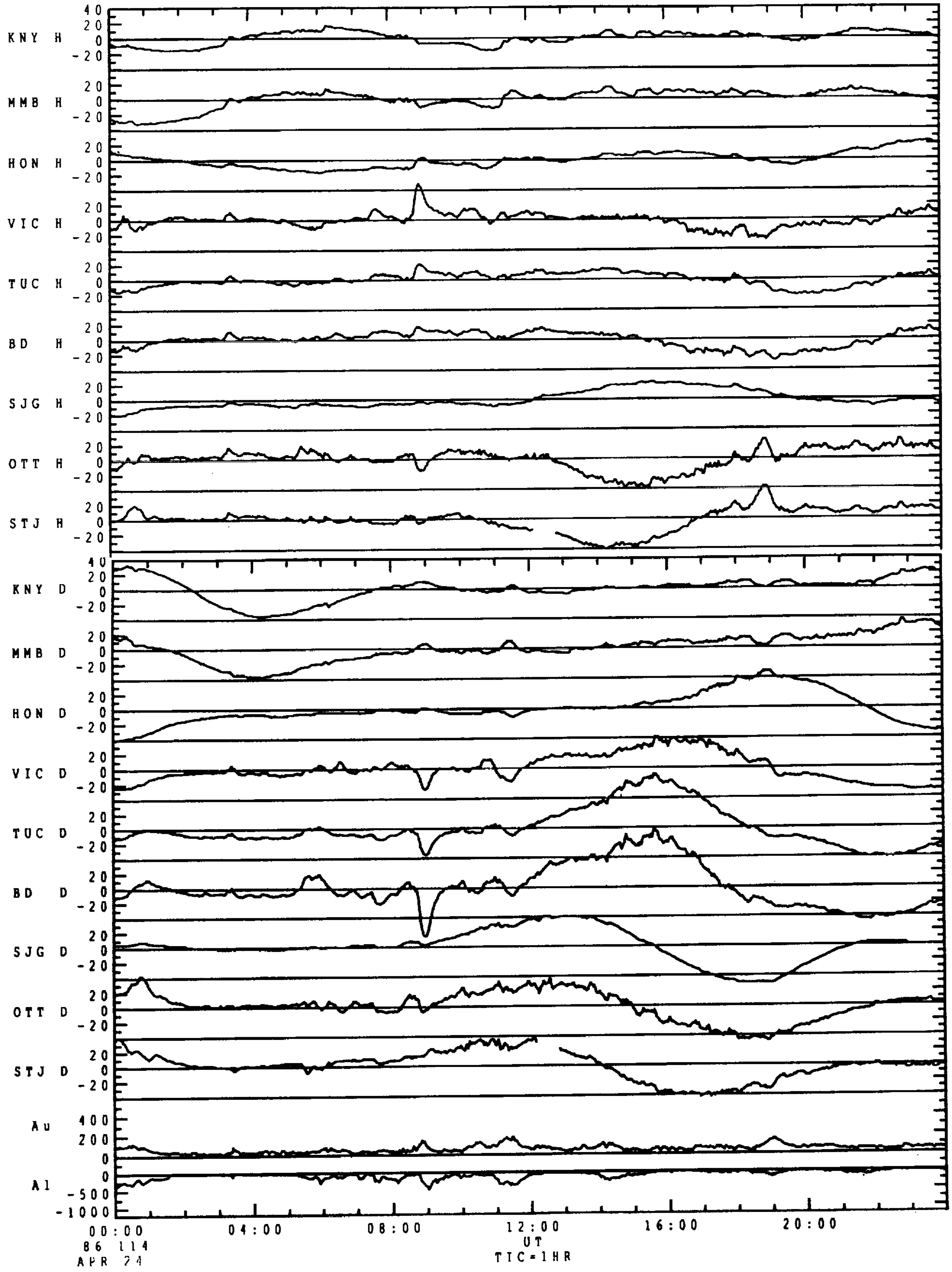
APR 22, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
86 112
APR 22
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

APR 23, 1986

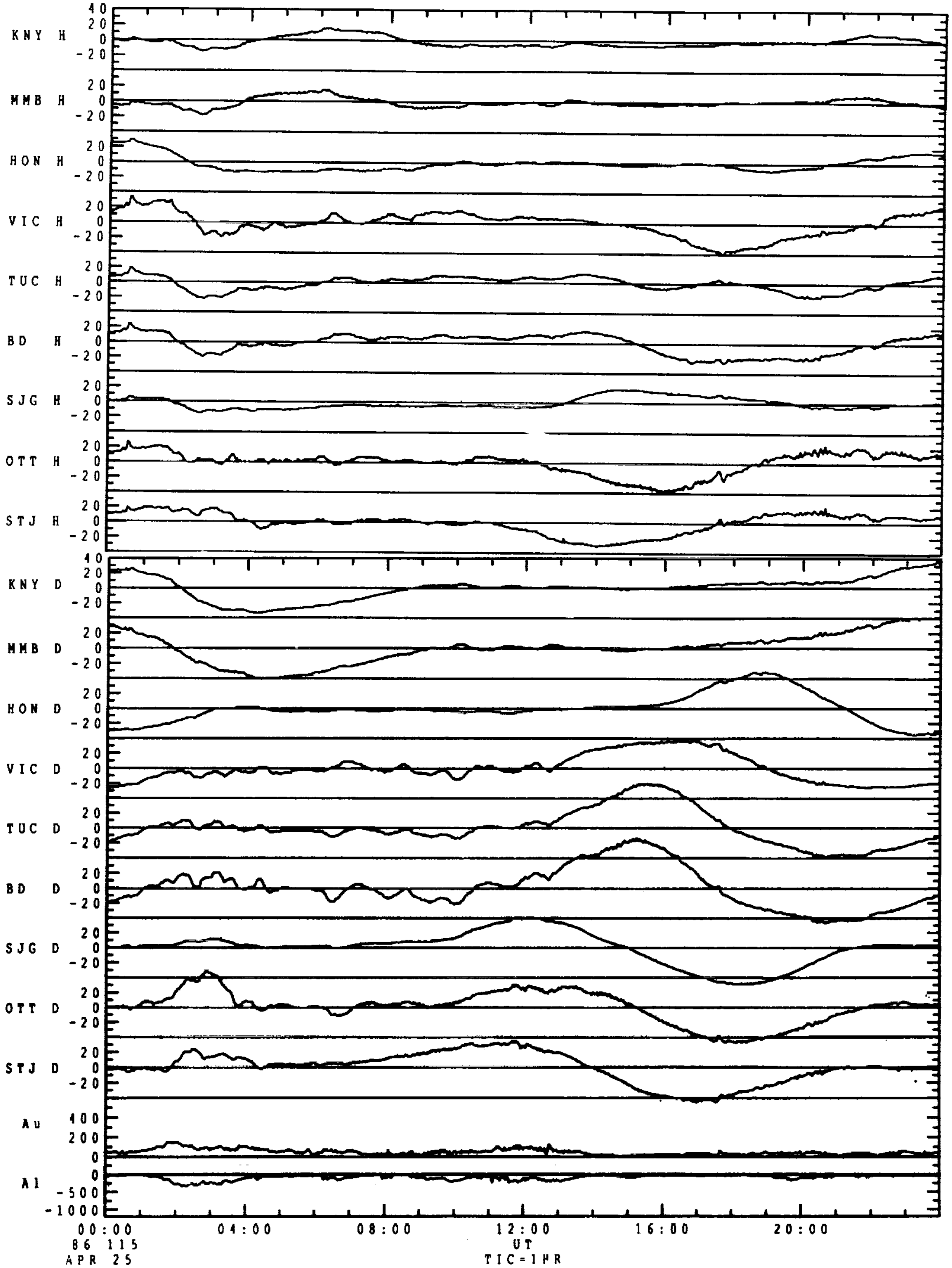

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
0
-500
-1000
00:00
86 113
APR 23
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

APR 24, 1986

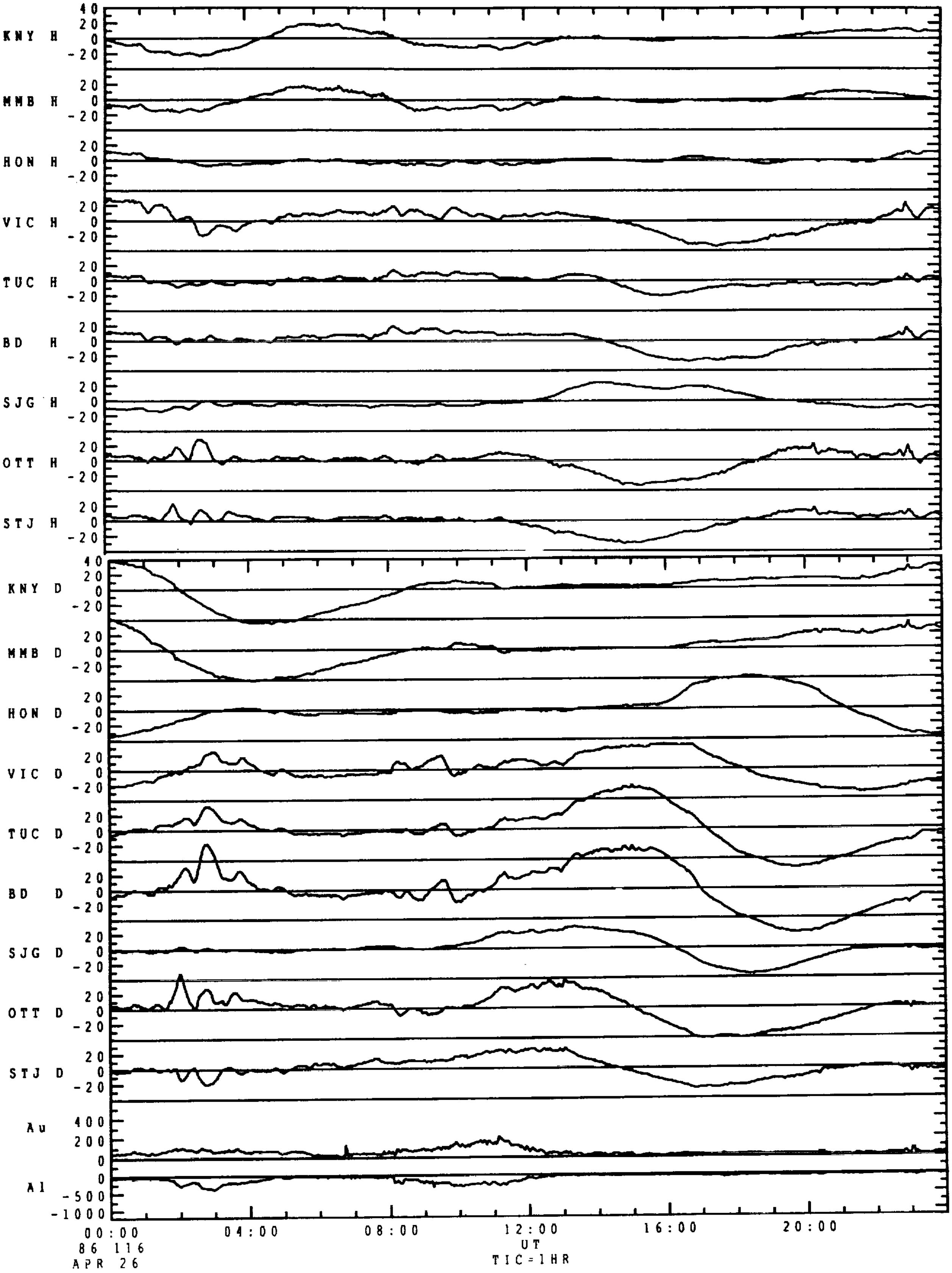

KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
86 114
APR 24
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

APR 25, 1986

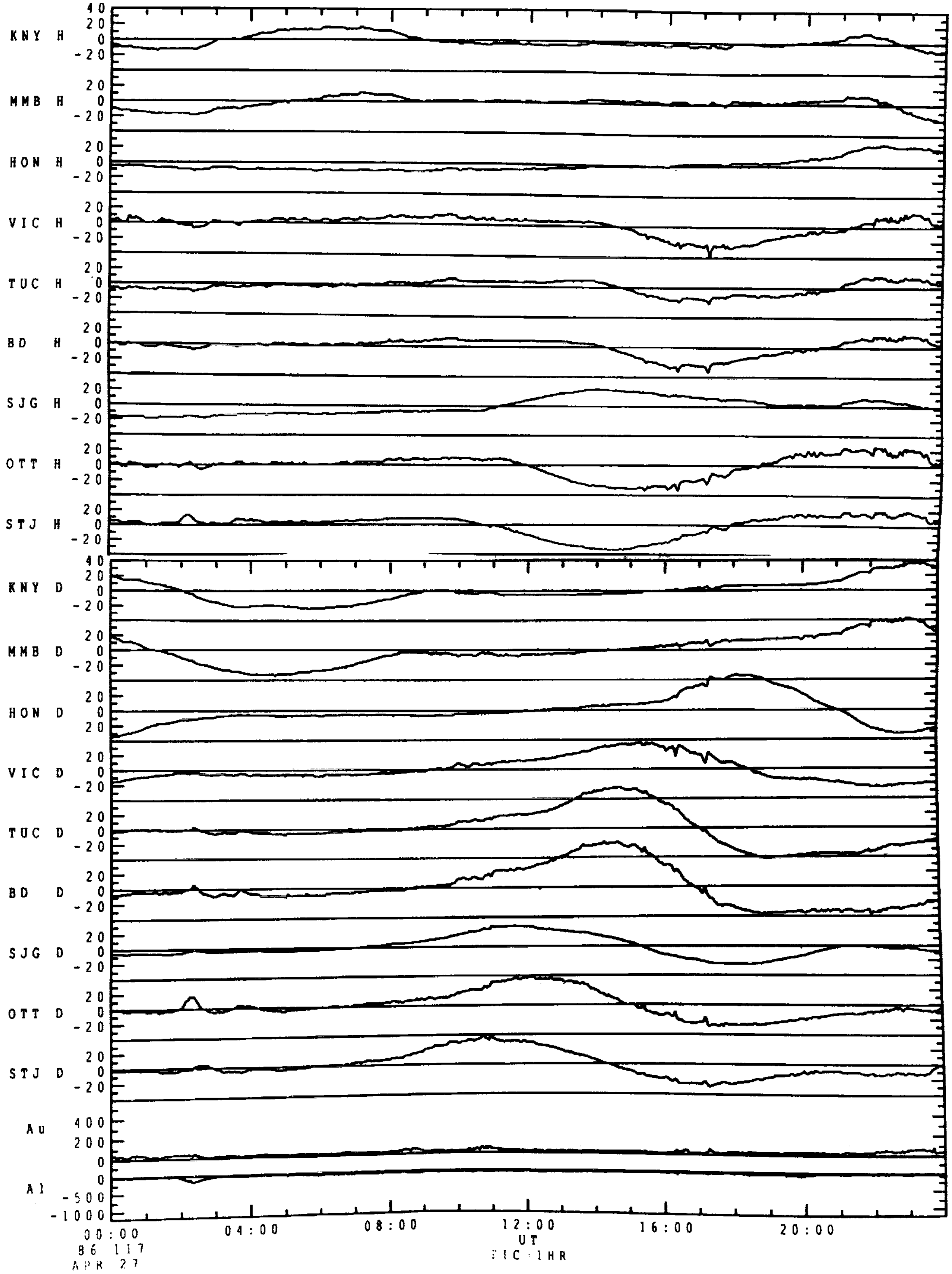
UCLA IGPP 90 JAN



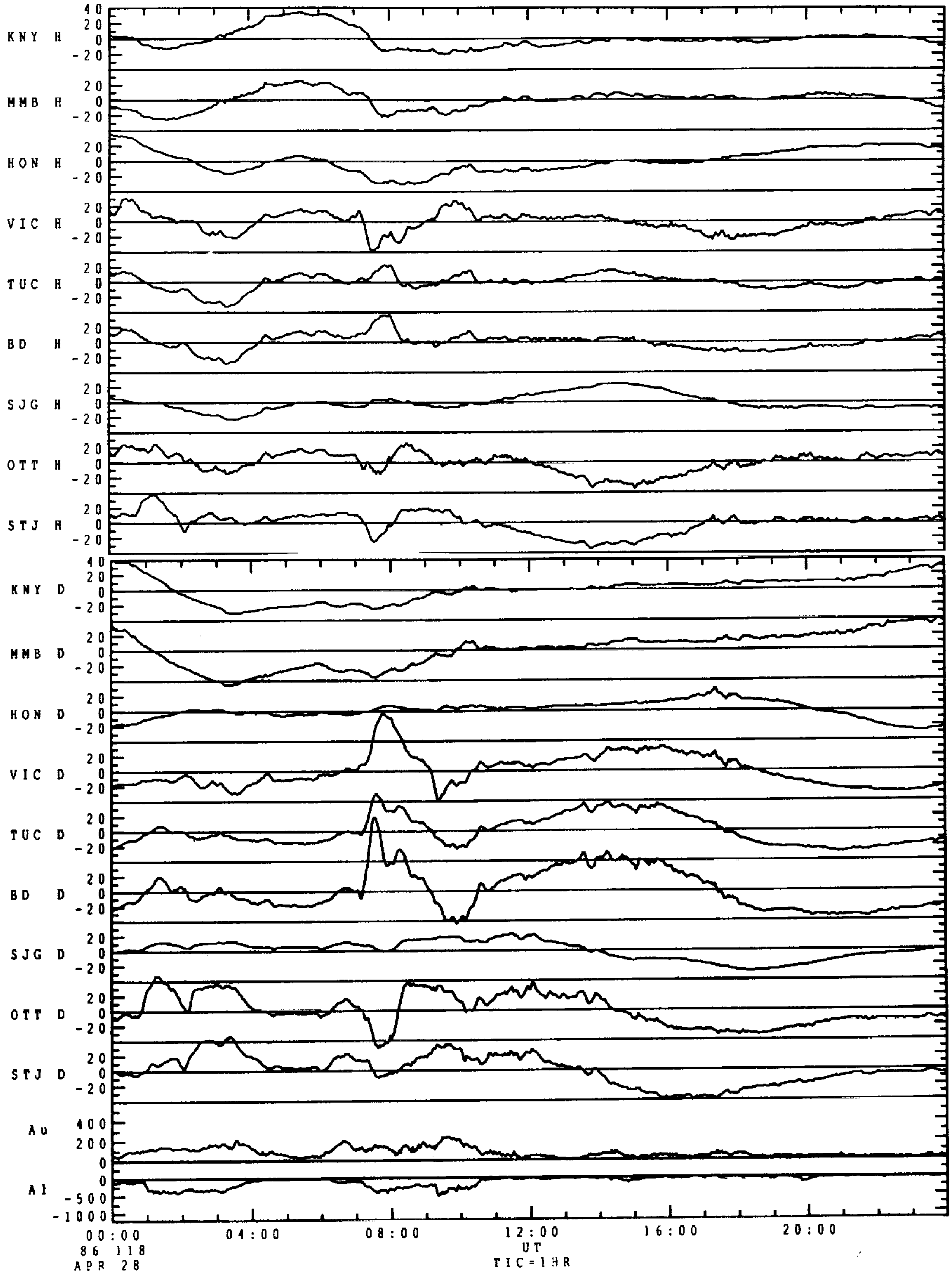
APR 26, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 116
APR 26
UT
TIC=1HR

APR 27, 1986 UCLA IGPP 90 JAN 6

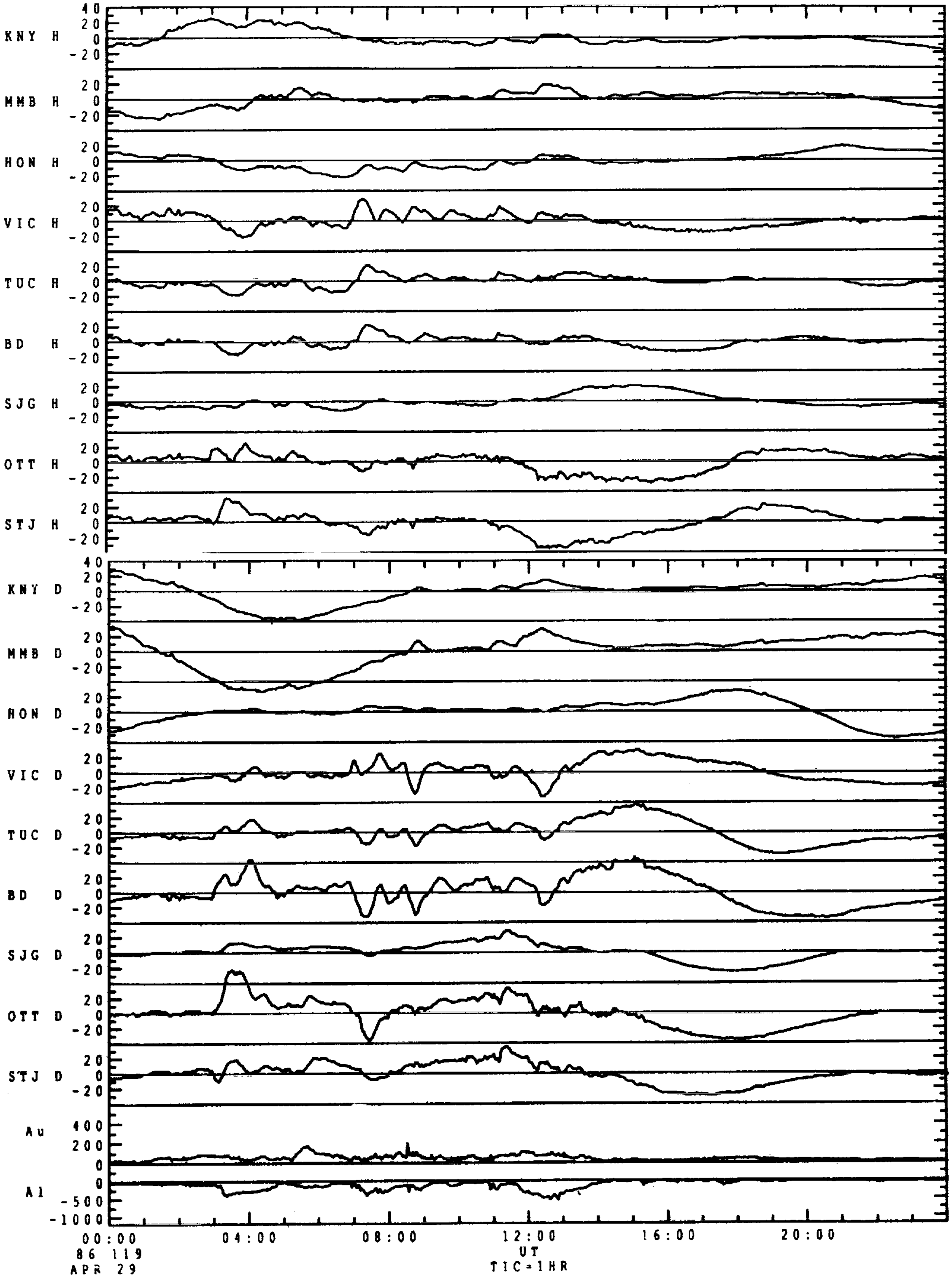


APR 28, 1986

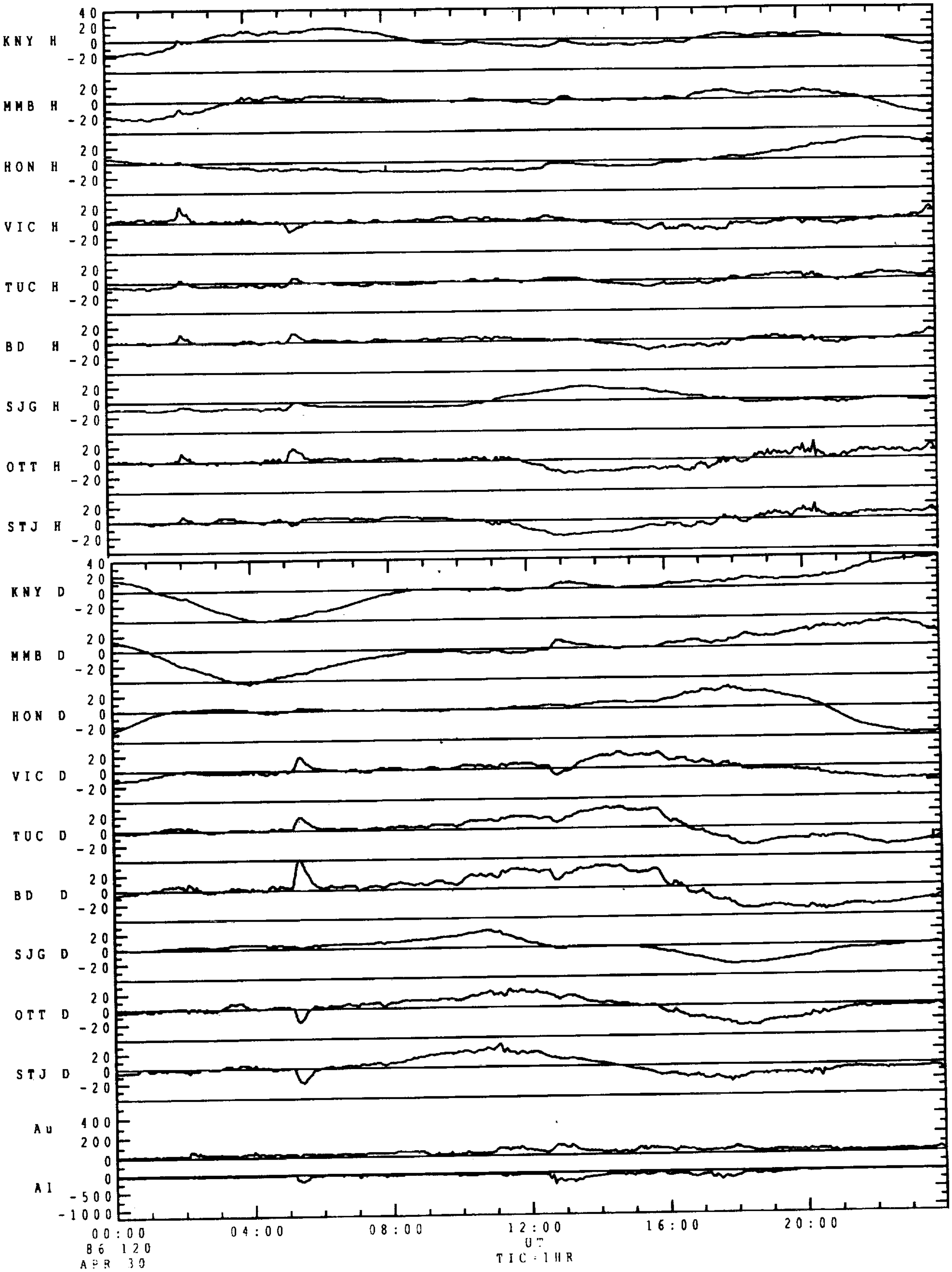

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 118
APR 28
UT
TIC=1HR

APR 29, 1986

UCLA IGPP 90 JAN 6

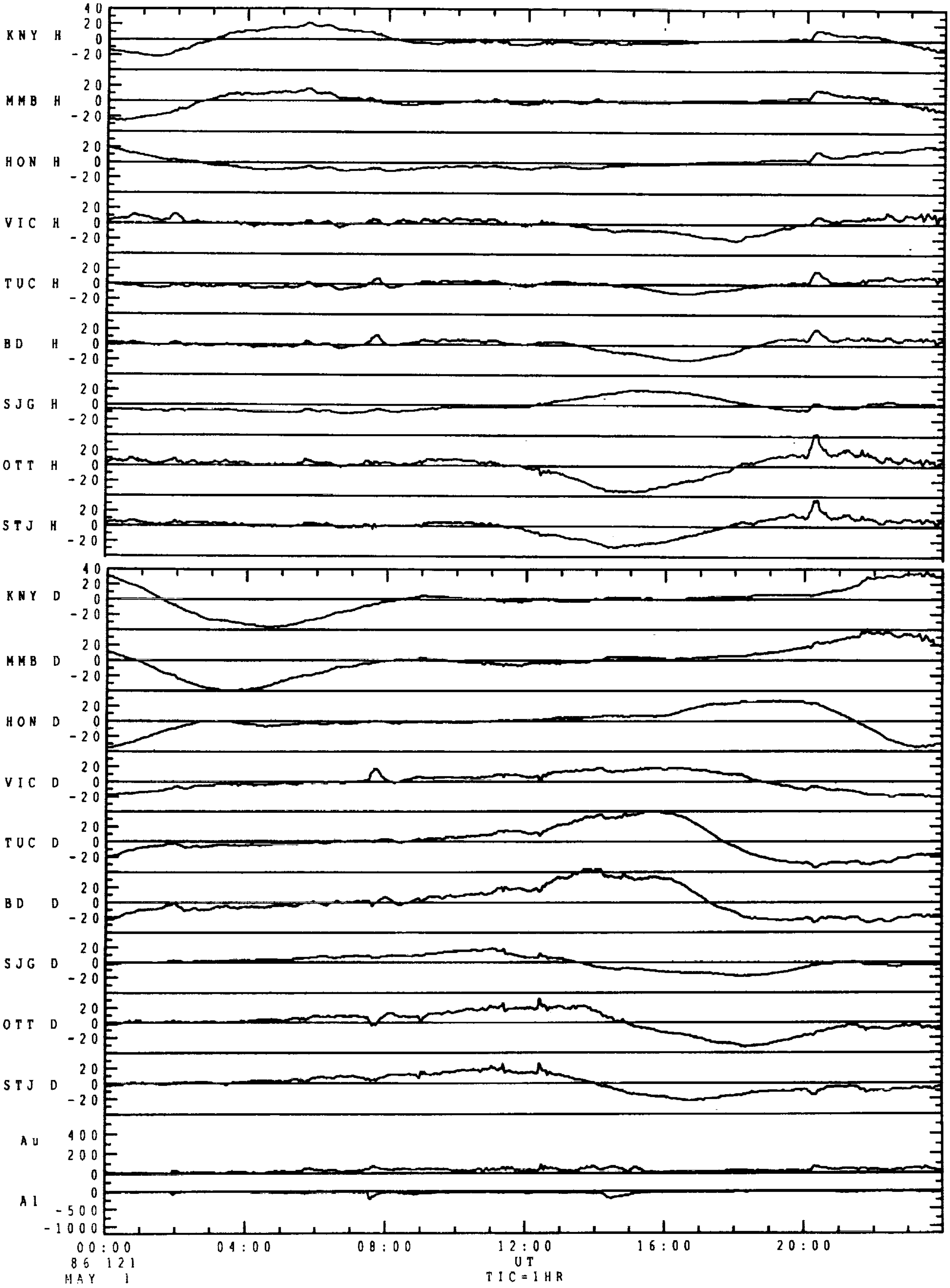


APR 30, 1986


KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 120
APR 30
UT
TIC=1HR

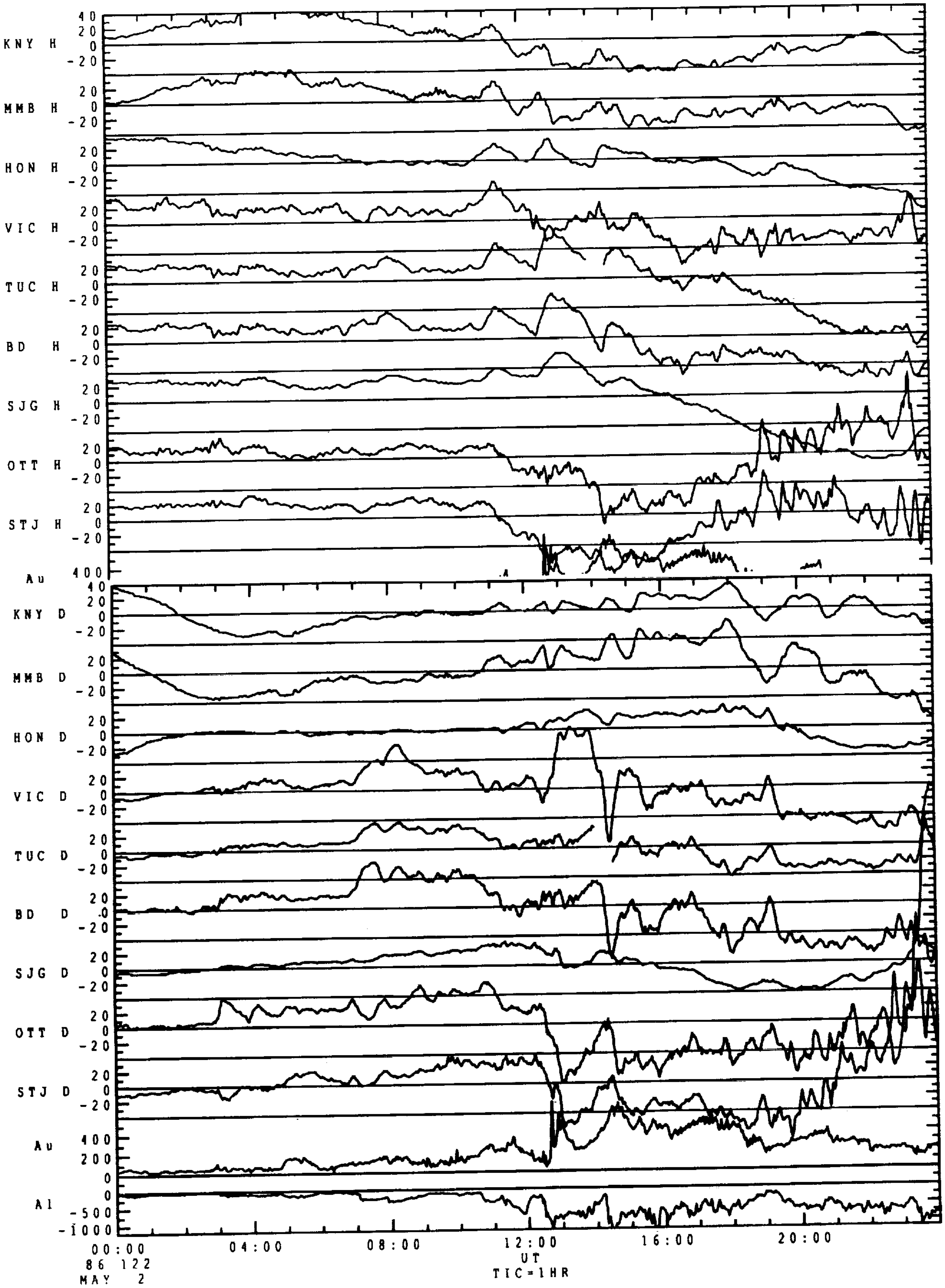
MAY 01, 1986

UCLA IGPP 90 JAN 6

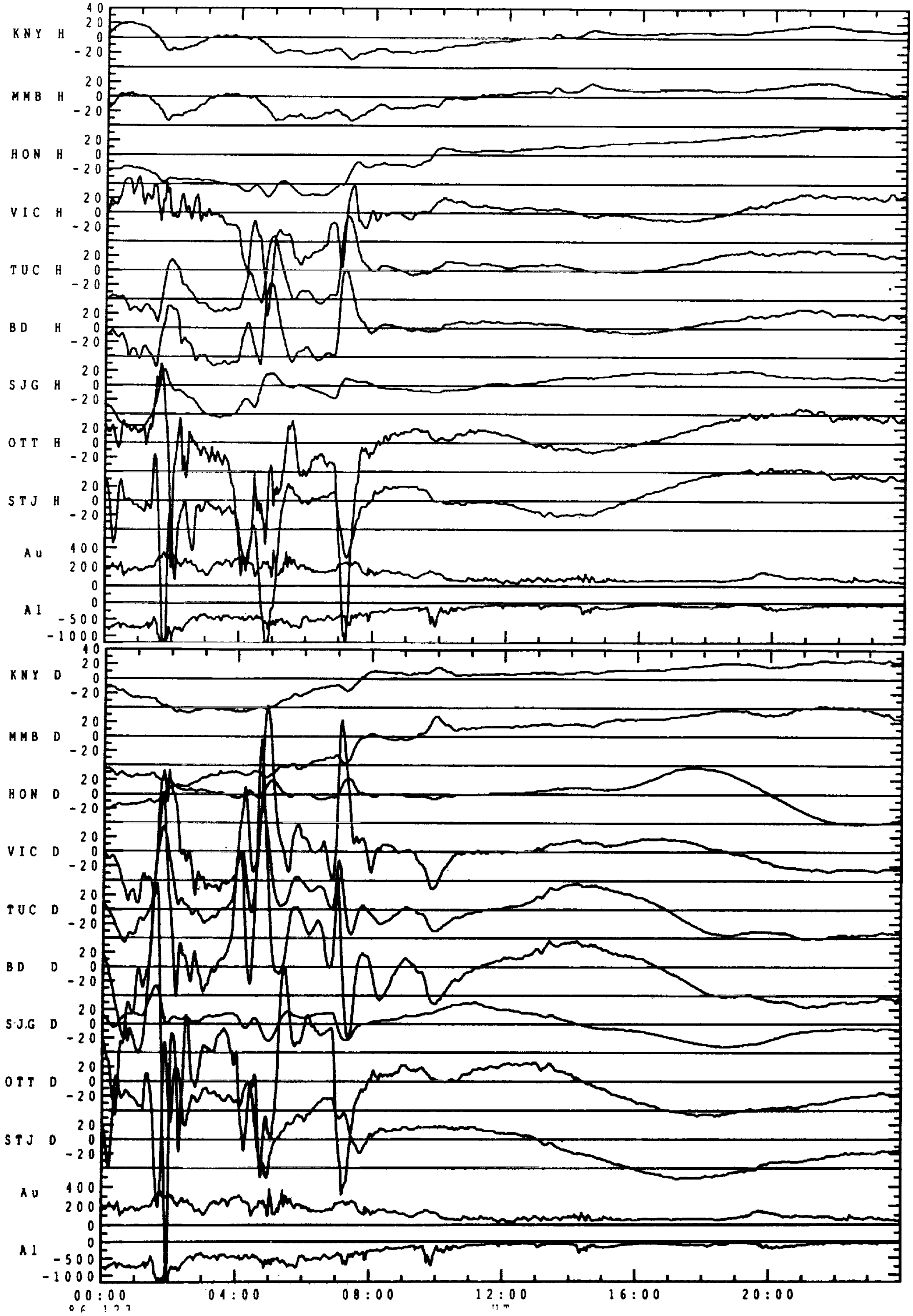


MAY 02, 1986

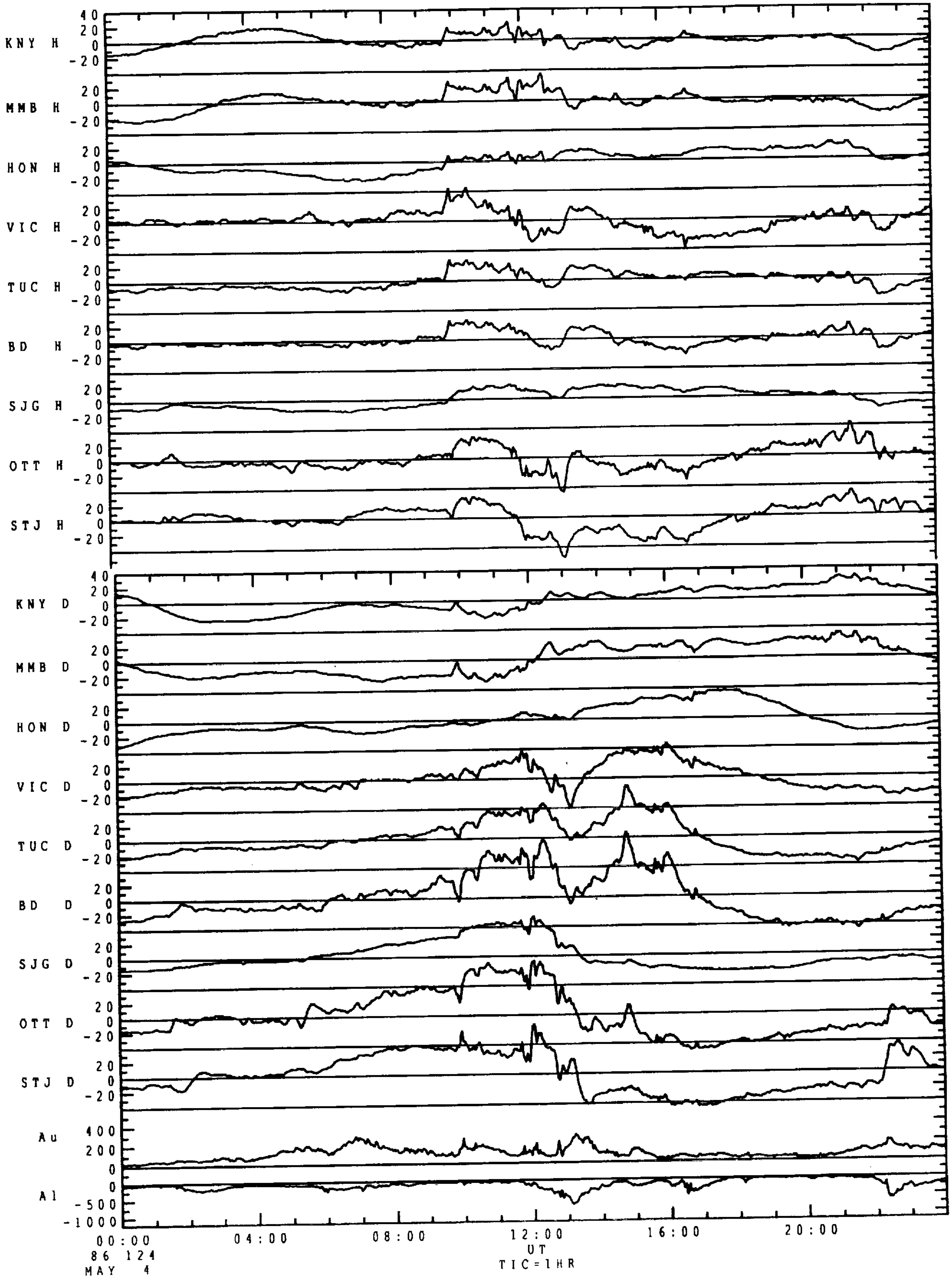
UCLA IGPP 97 JAN 6



MAY 03, 1986 UCLA IGPP 30 JAN 6

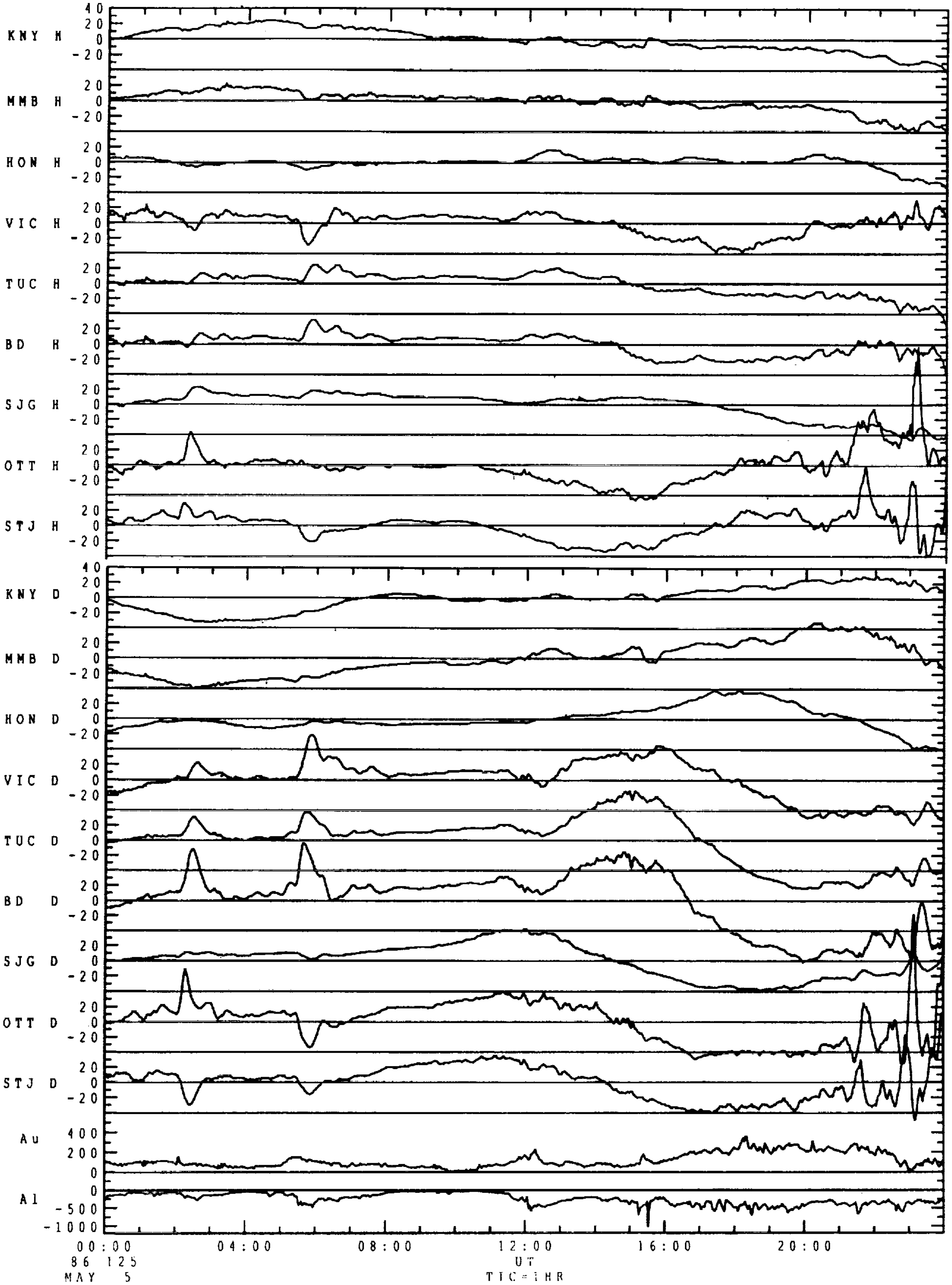


MAY 04, 1986

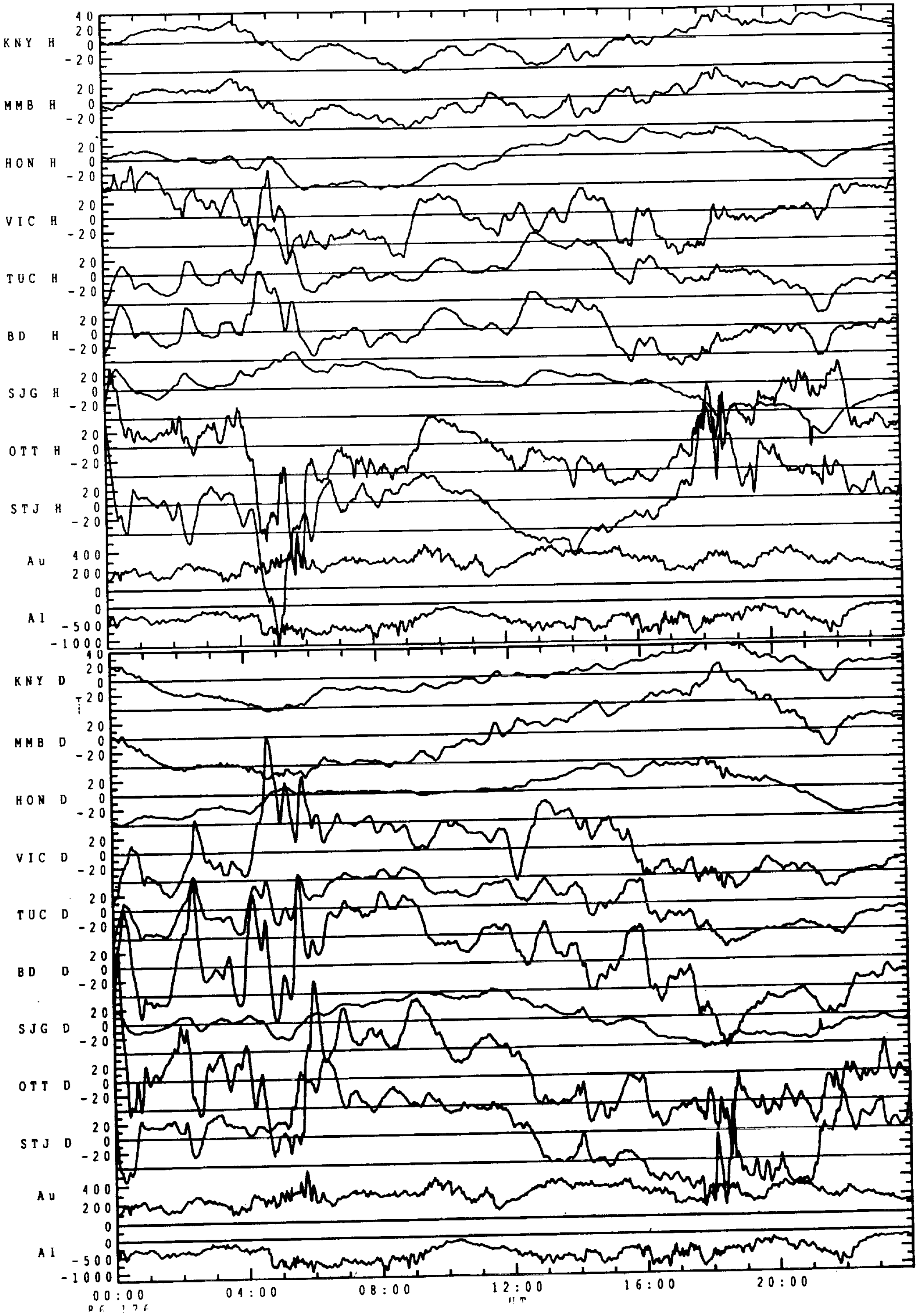

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 124
MAY 4
UT
TIC=1HR

MAY 05, 1986

UCLA IGPP 90 JAN 5

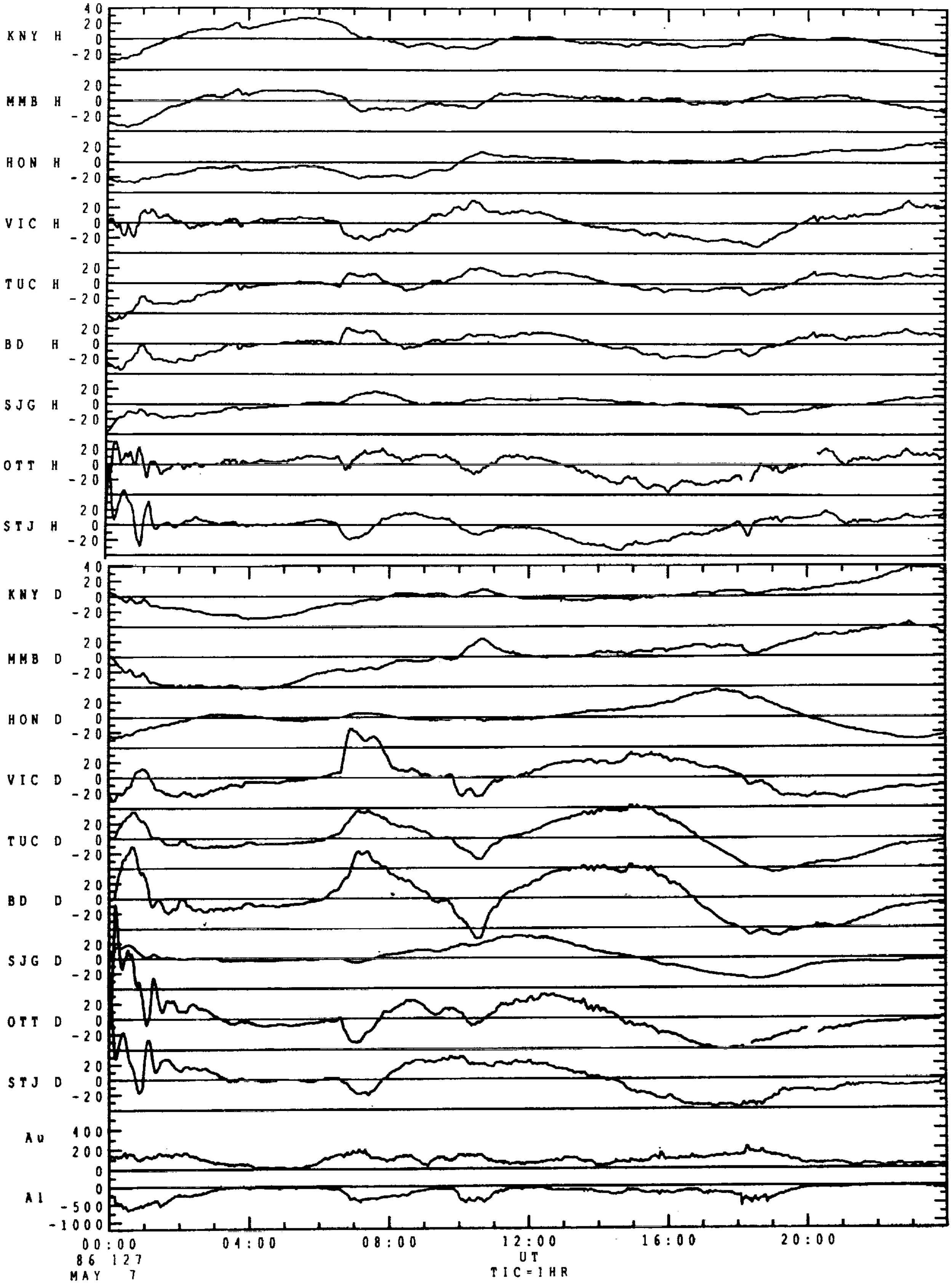


MAY 06, 1986

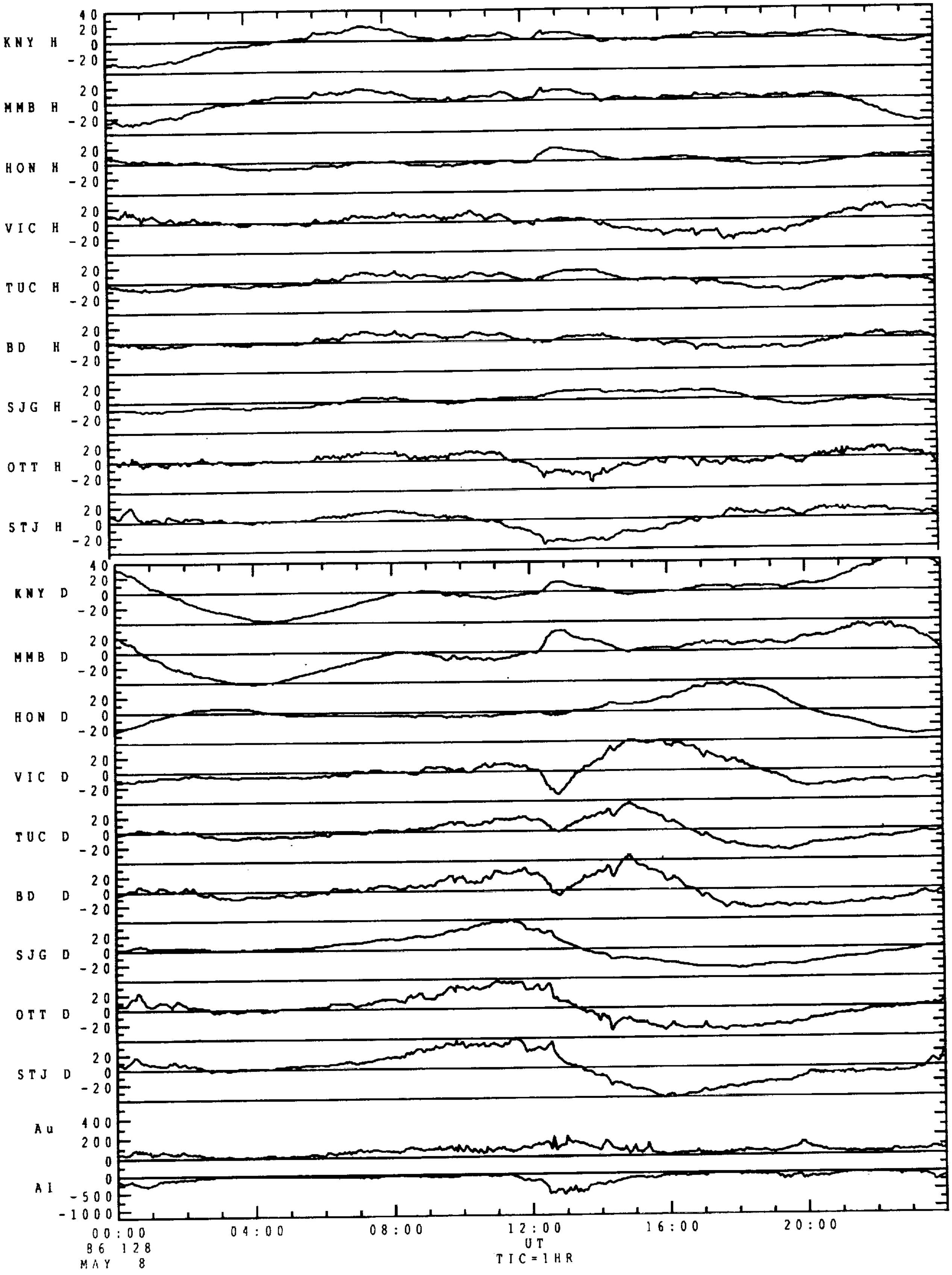

KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
Au
400
200
0
Al
0
-500
-1000
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
UT

MAY 07, 1986

UCLA IGPP 90 JAN 6

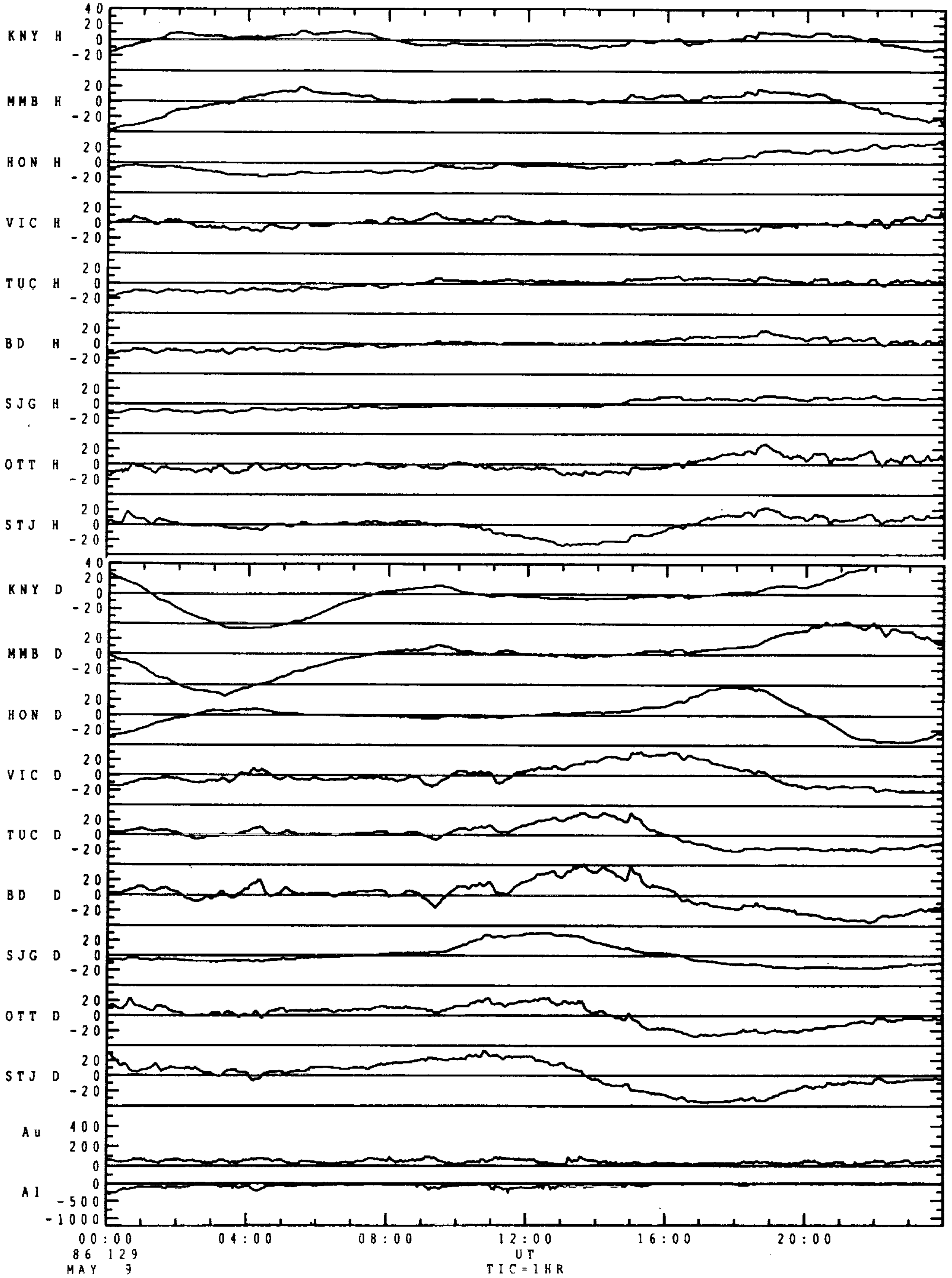


MAY 08, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
0
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 128
MAY 8
UT
TIC=1HR

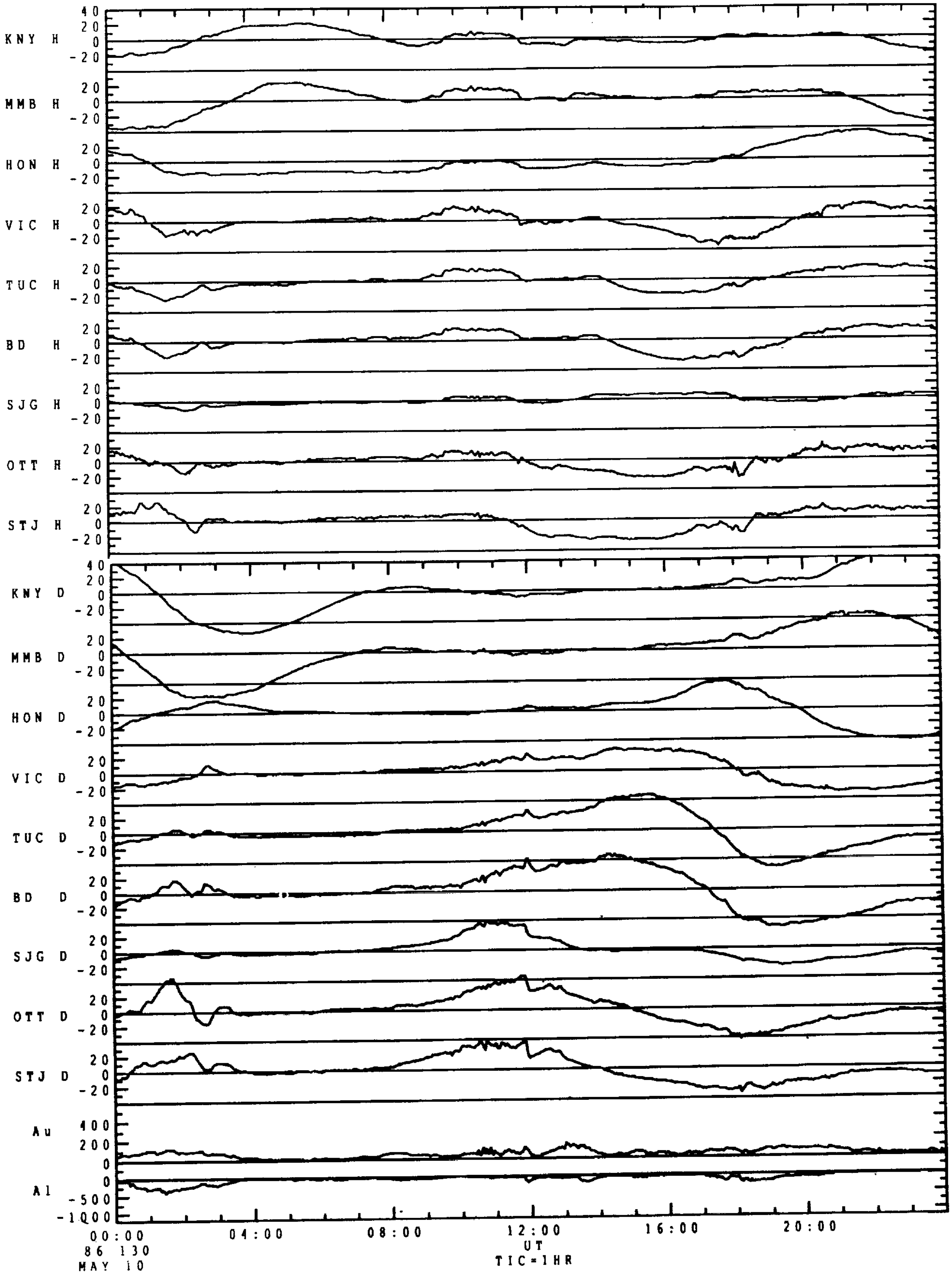
MAY 09, 1986

UCLA IGPP 90 JAN 6

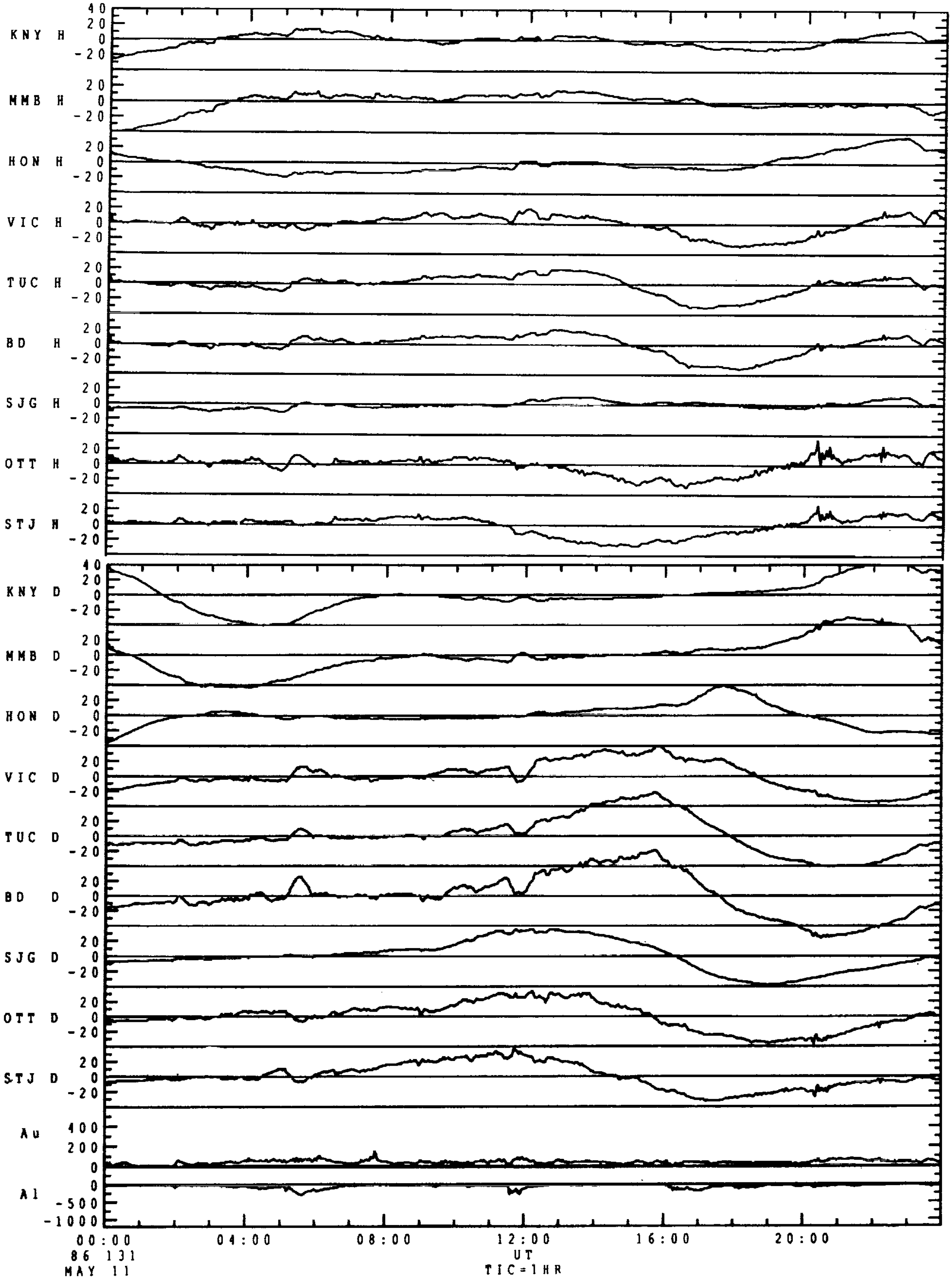


MAY 10, 1986

UCLA IGPP 90 JAN 6

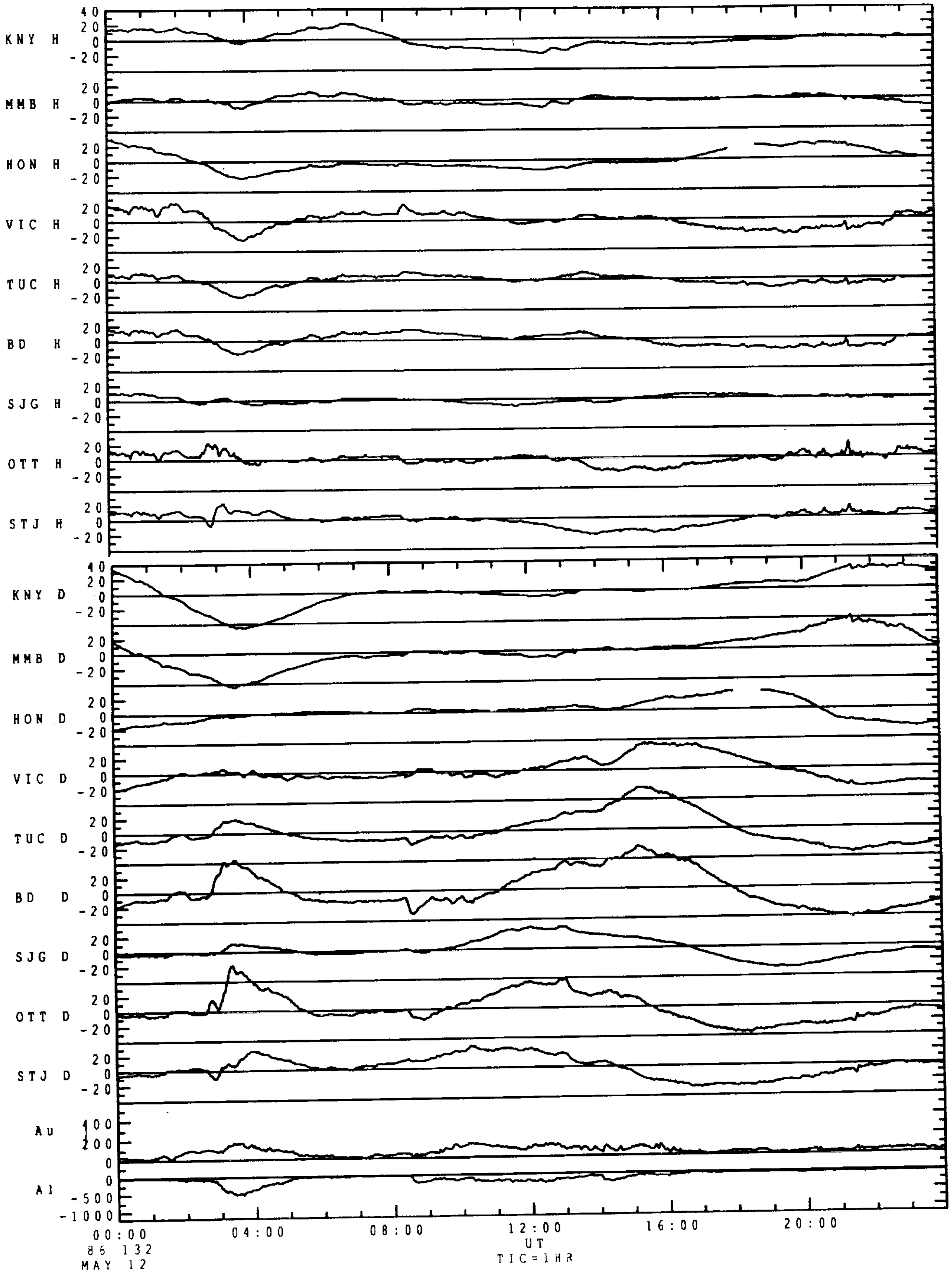


MAY 11, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 131
MAY 11
UT
TIC=1HR

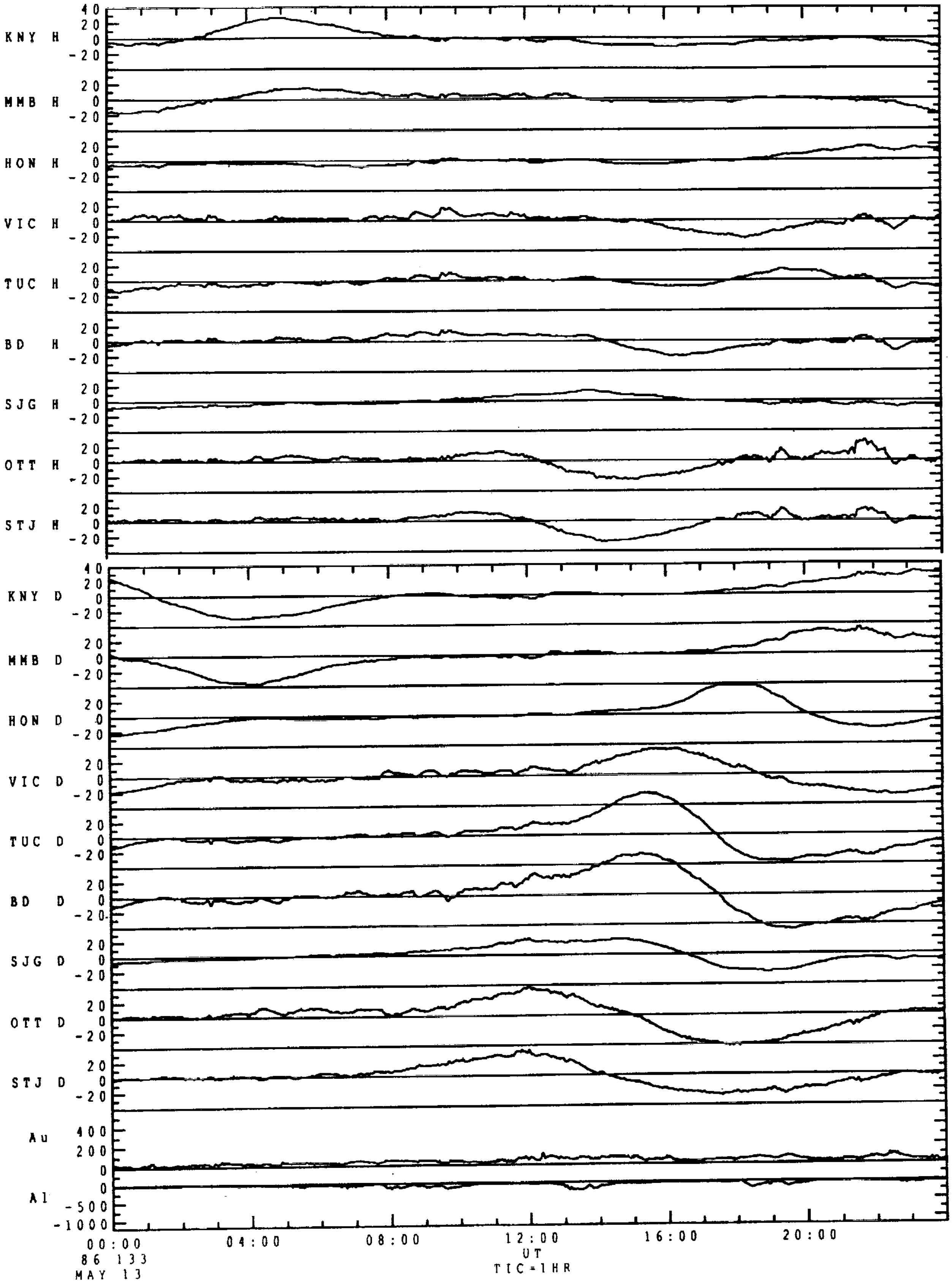
MAY 12, 1986

UCLA IGPP 90 JAN

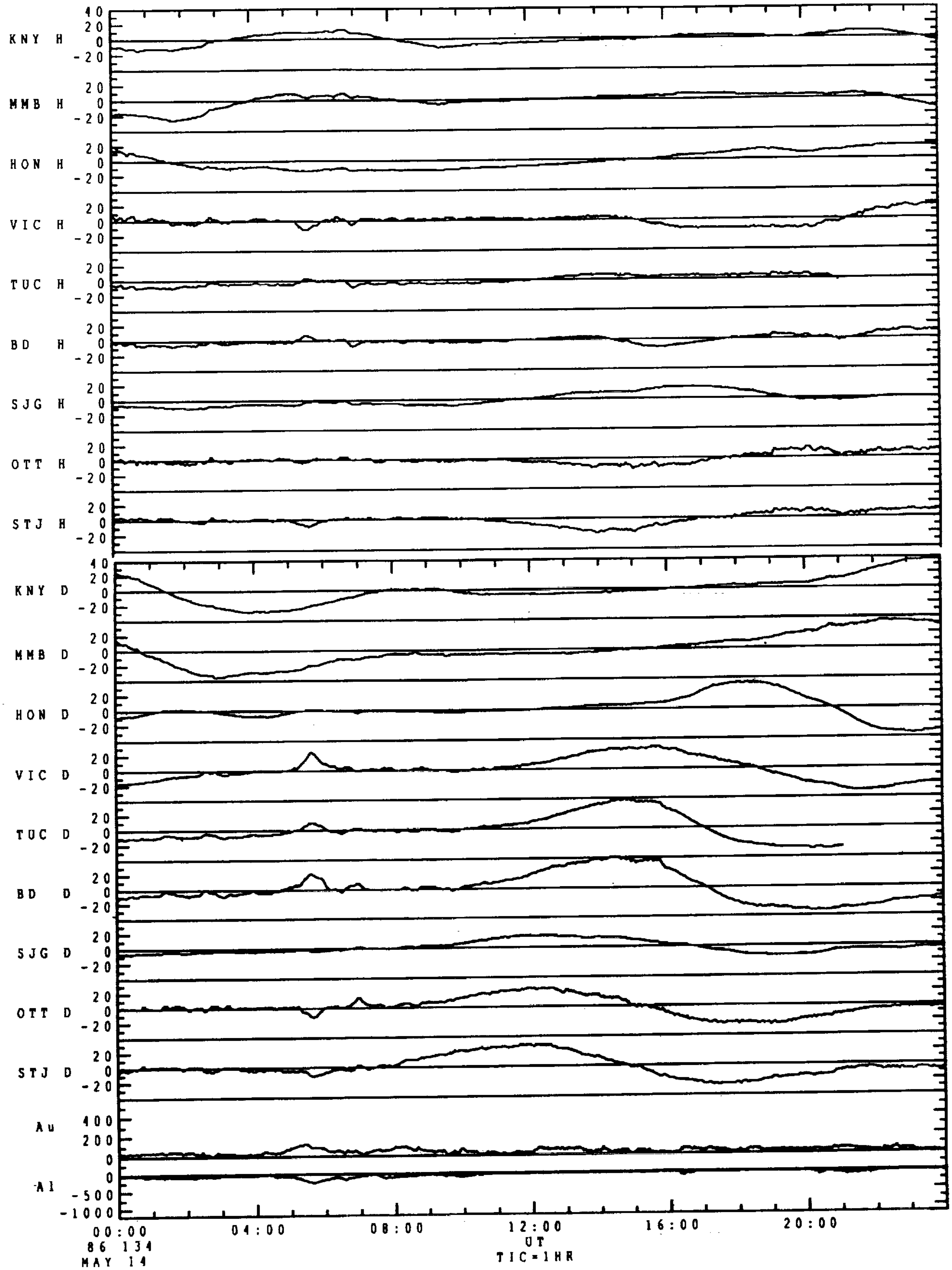


MAY 13, 1986

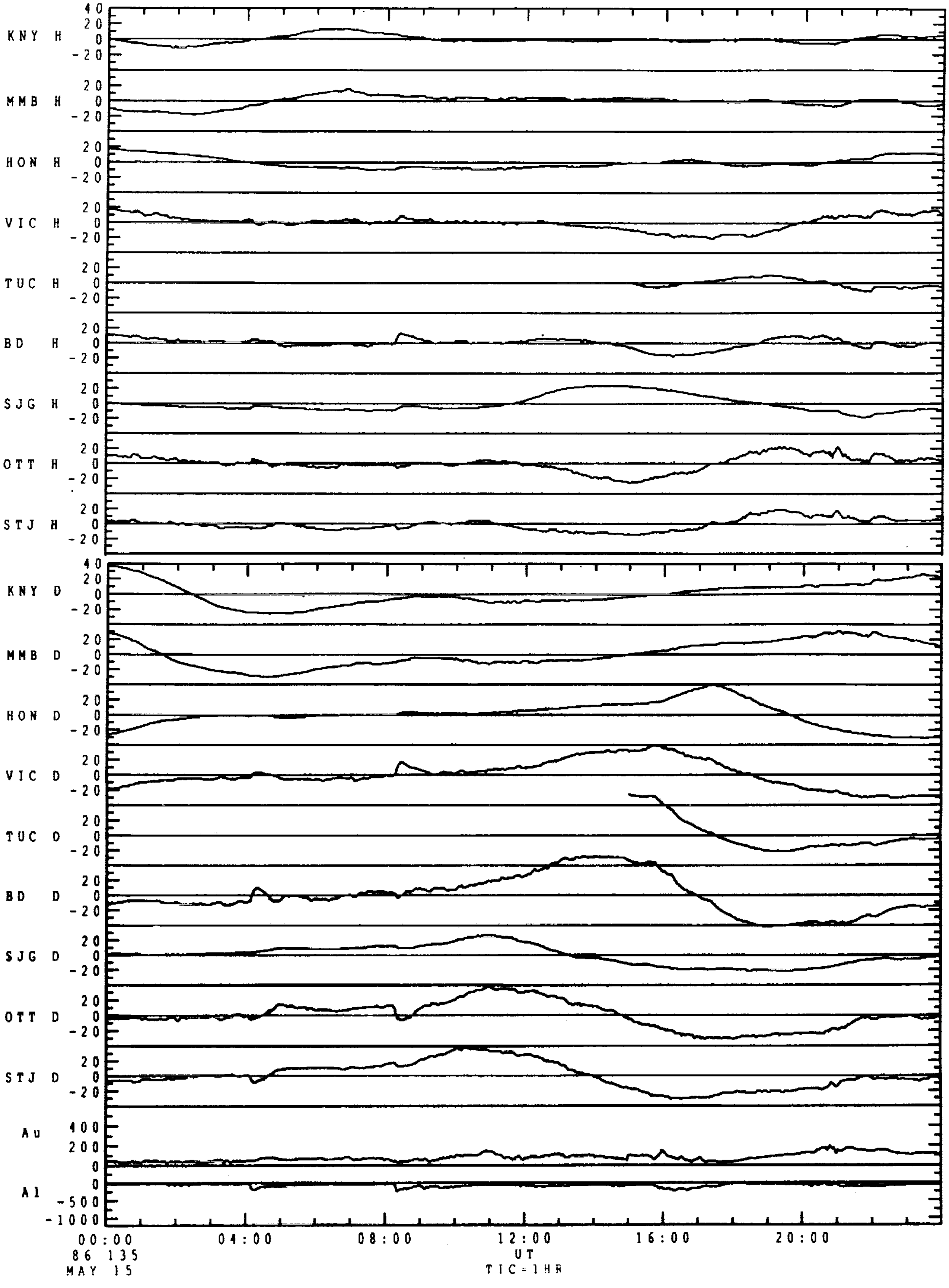
UCLA IGPP 90 JAN 6



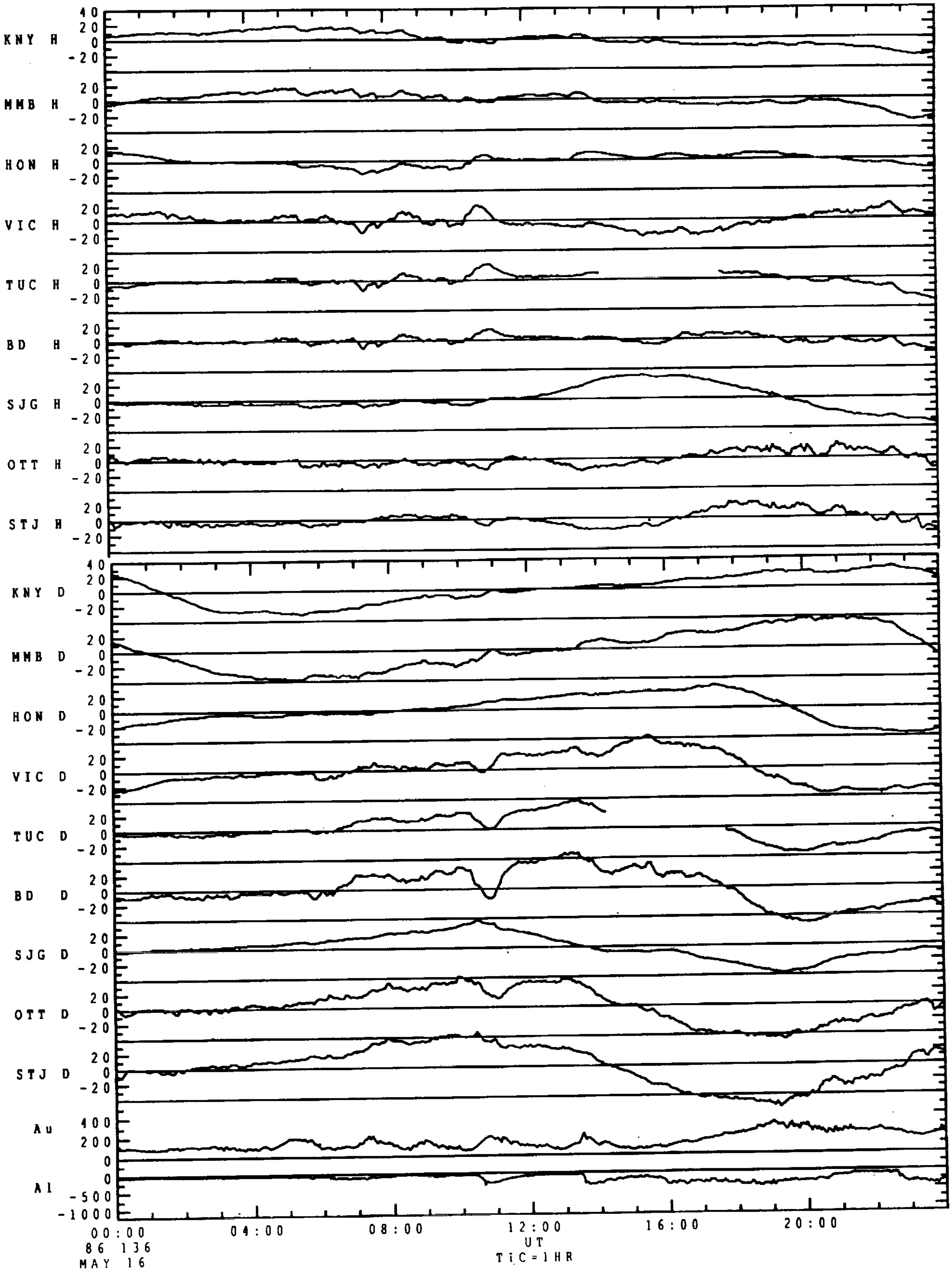
MAY 14, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
0
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 134
MAY 14
UT
TIC=1HR

MAY 15, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 135
MAY 15
UT
TIC=1HR

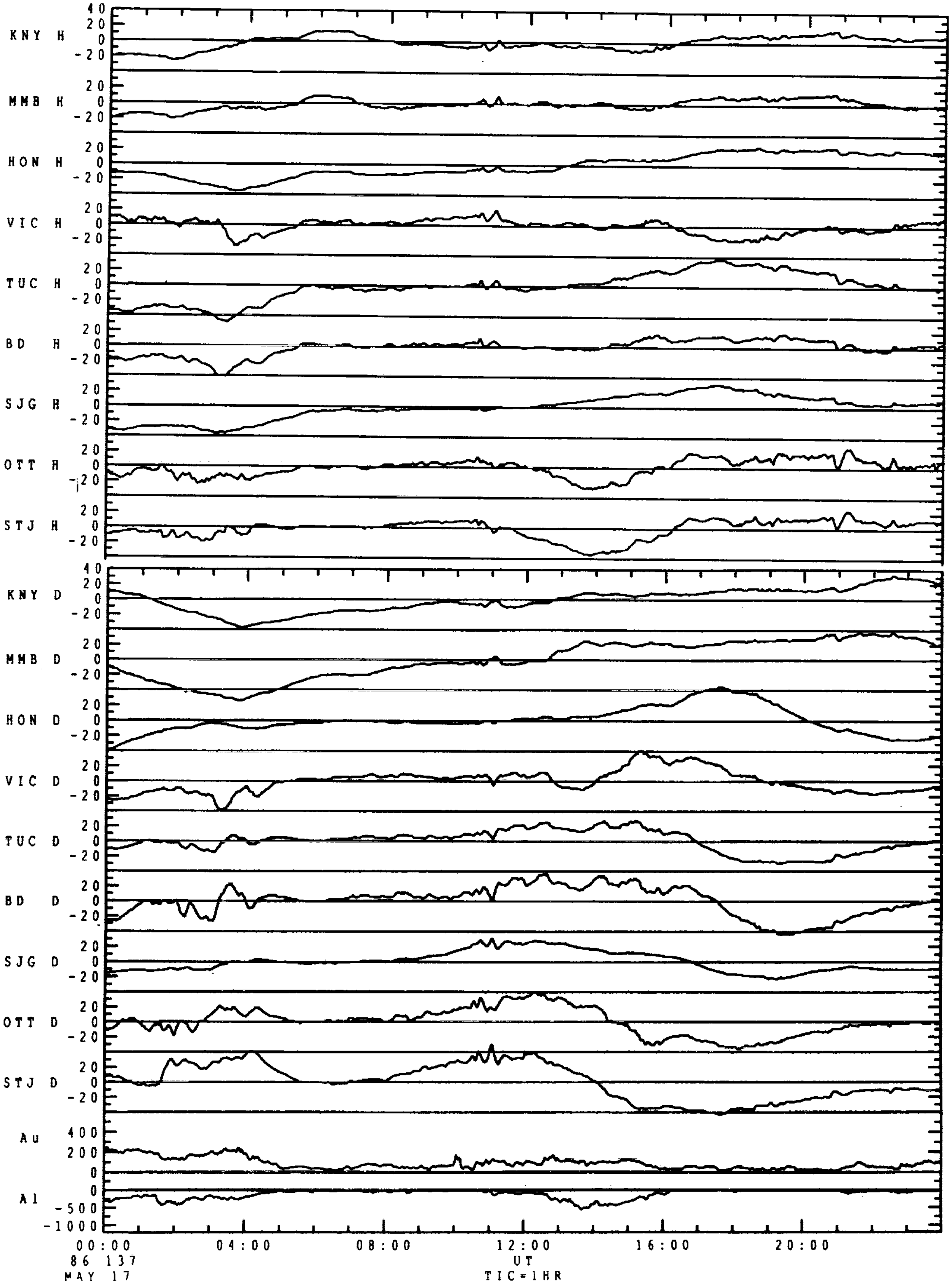
MAY 16, 1986



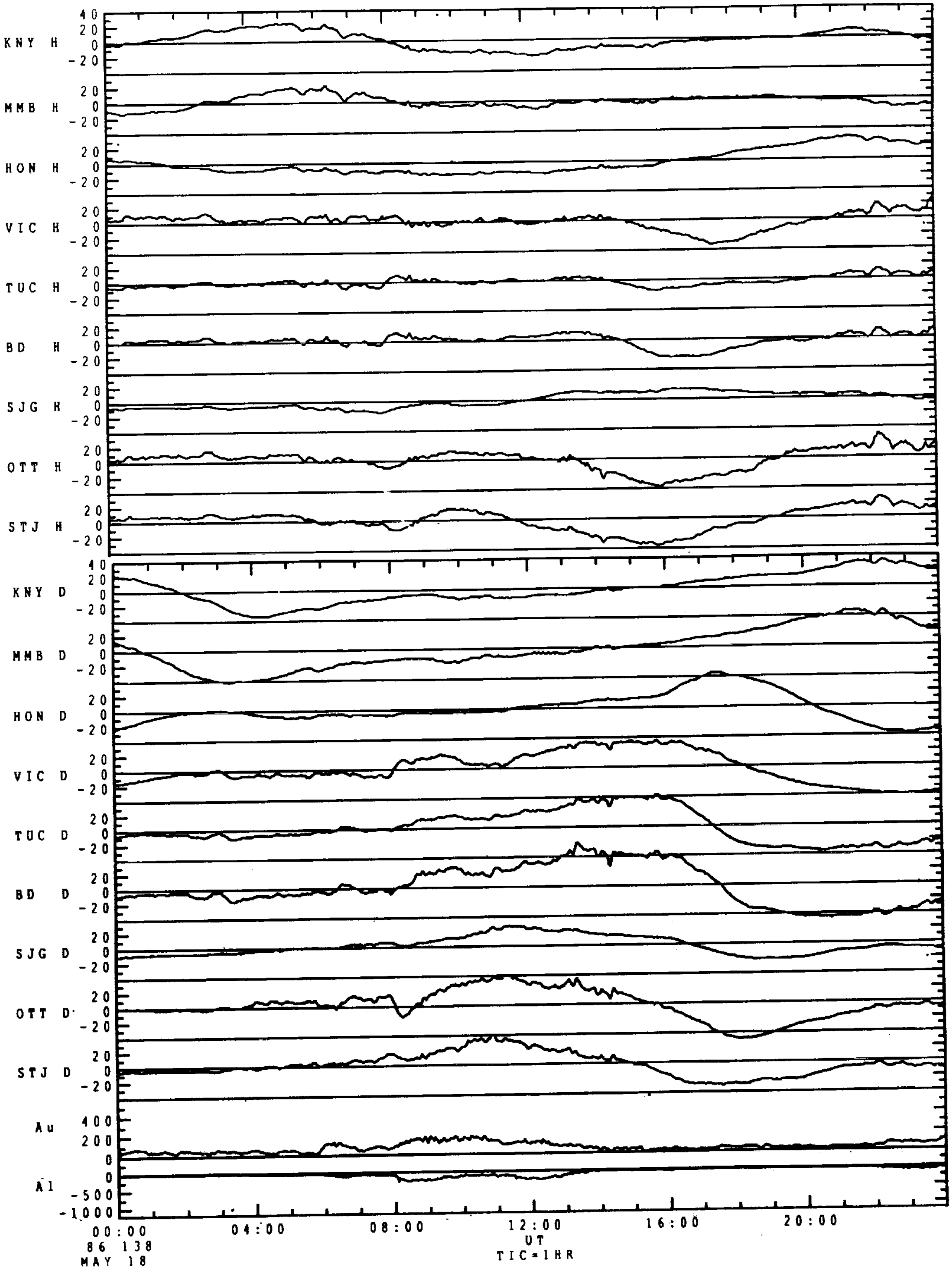
KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
86 136
MAY 16
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

MAY 17, 1986

UCLA IGPP 90 JAN 6

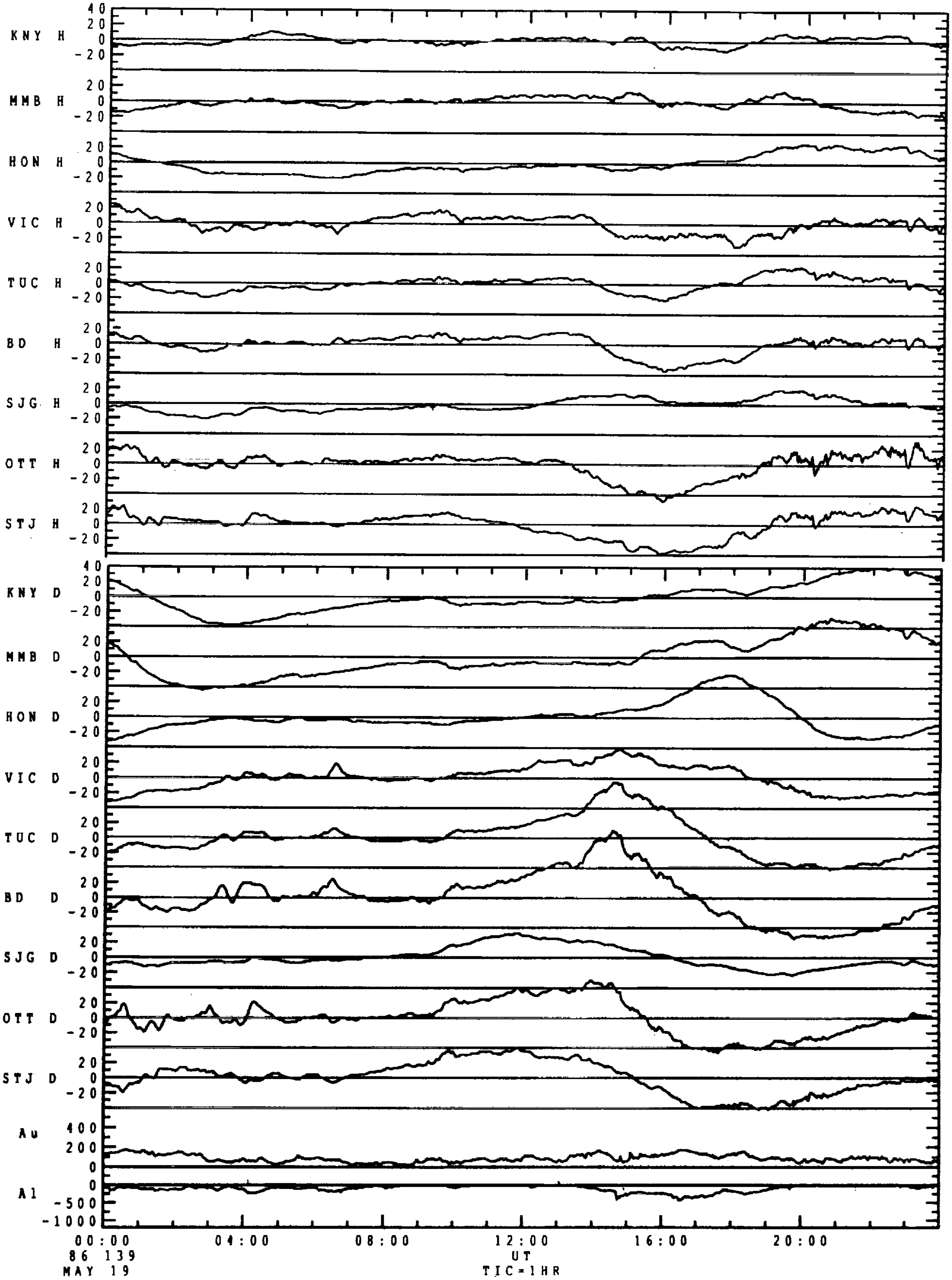


MAY 18, 1986

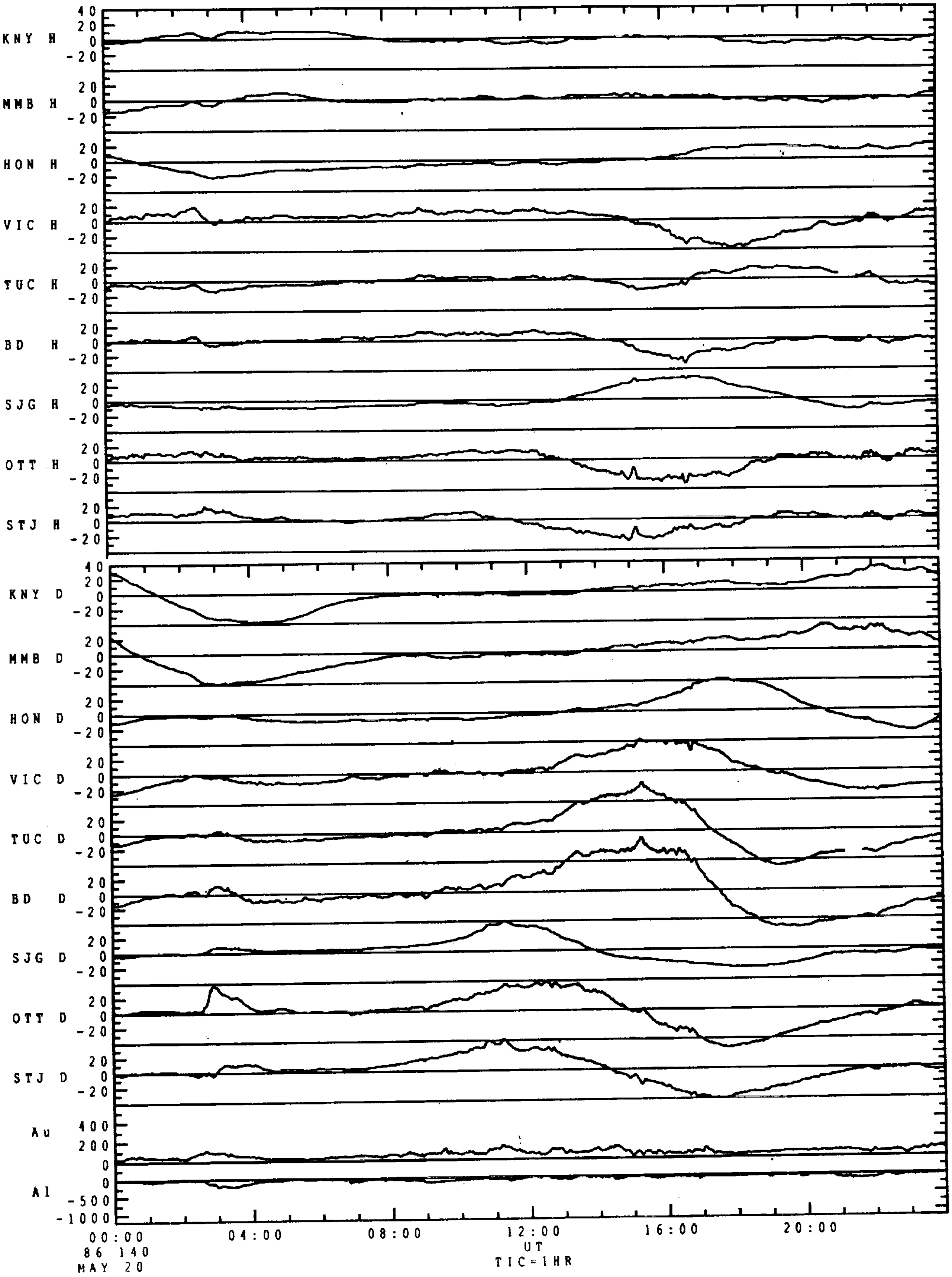

KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
86 138
MAY 18
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

MAY 19, 1986

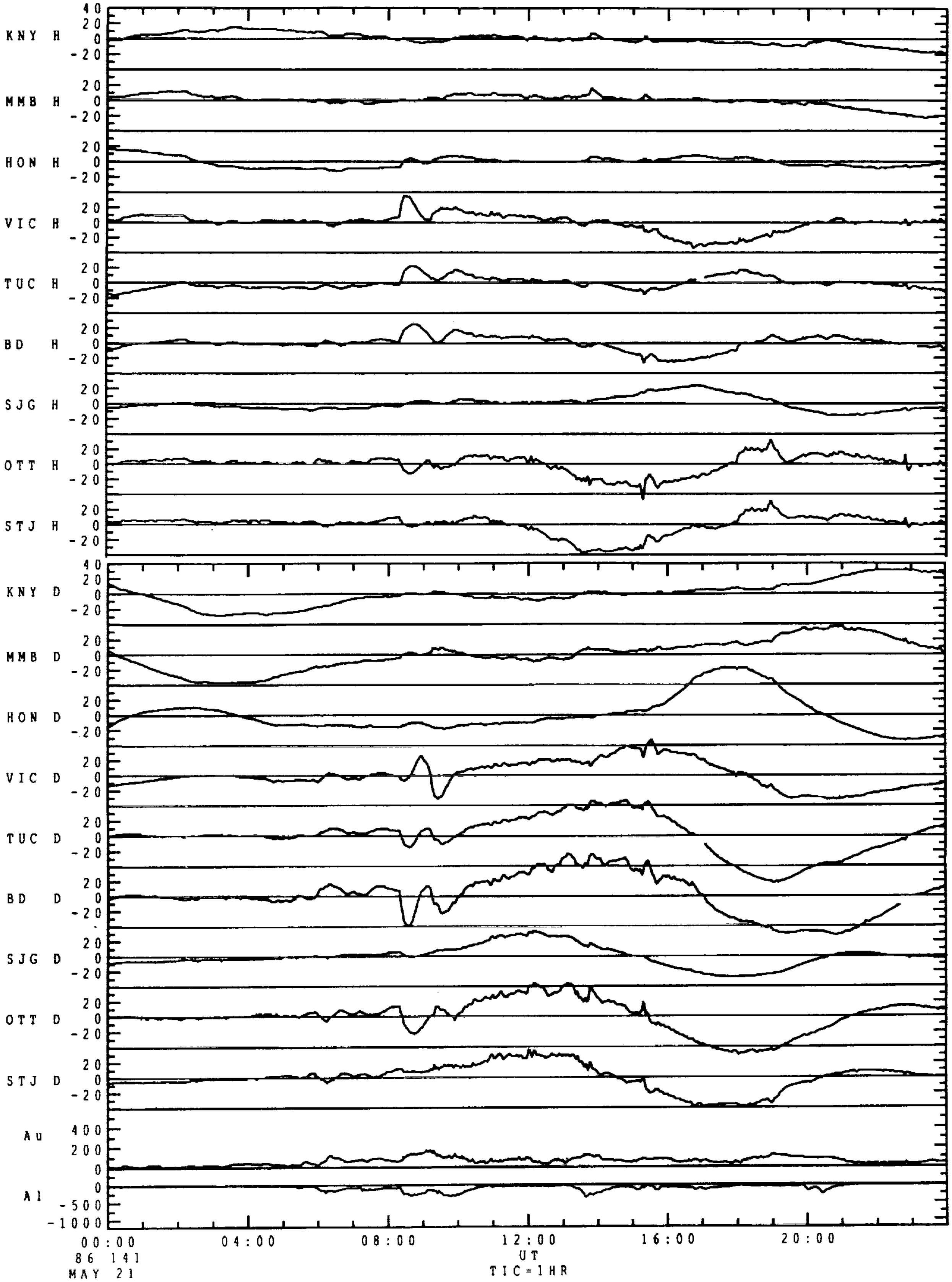
UCLA IGPP 90 JAN 6



MAY 20, 1986

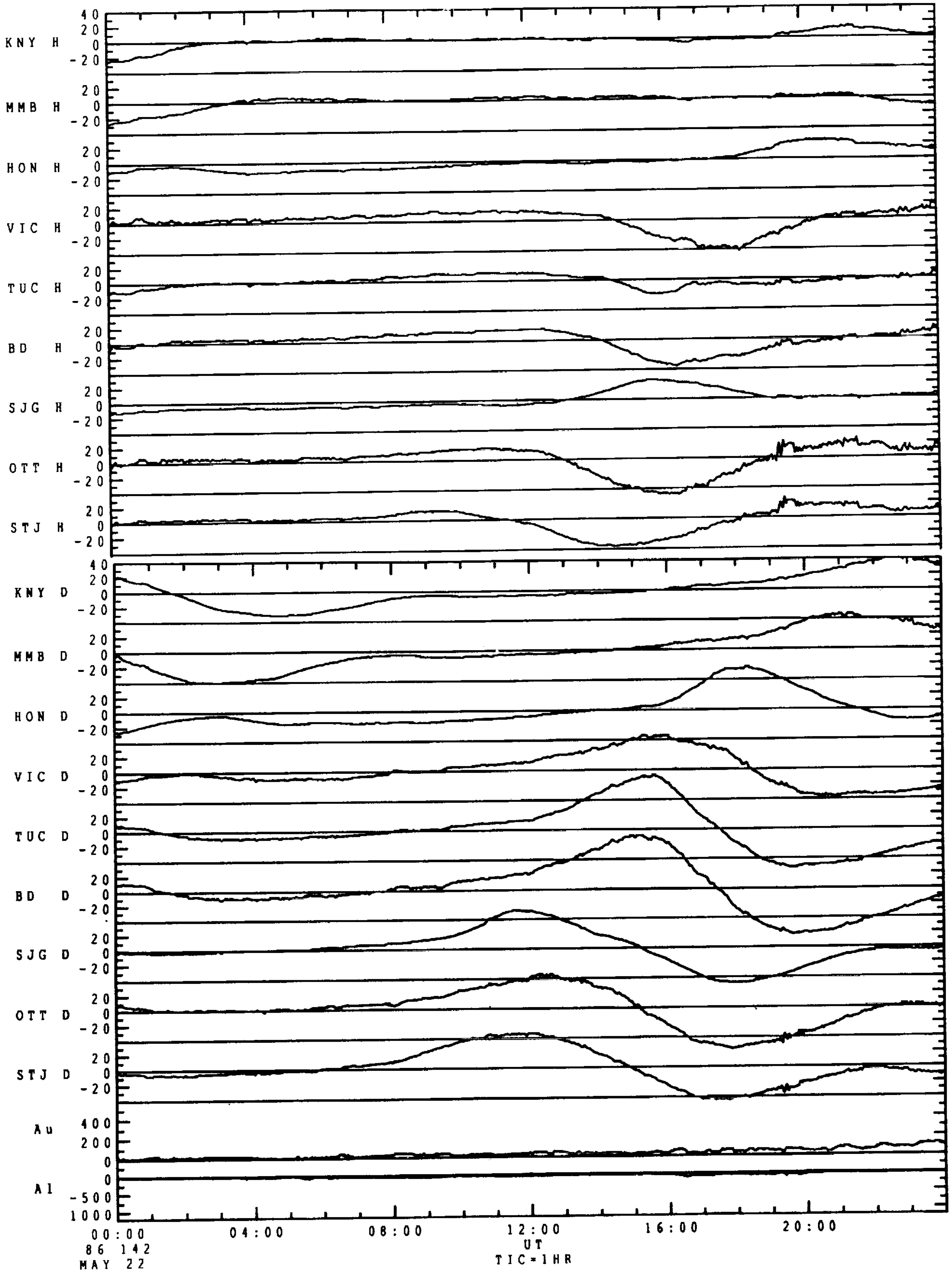

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 140
MAY 20
UT
TIC=1HR

MAY 21, 1986

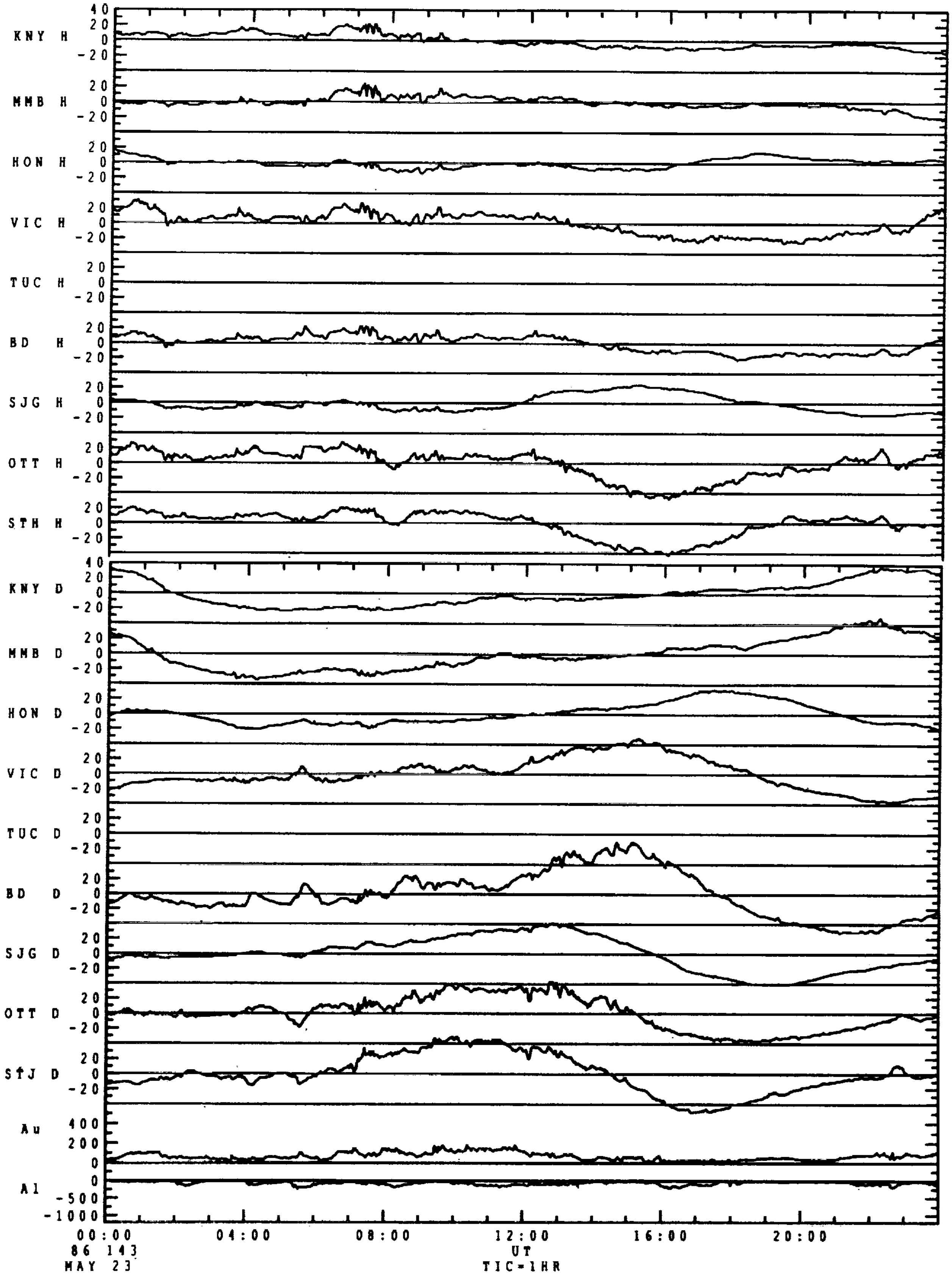

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 141
MAY 21
UT
TIC=1HR

MAY 22, 1986

UCLA IGPP 90 JAN

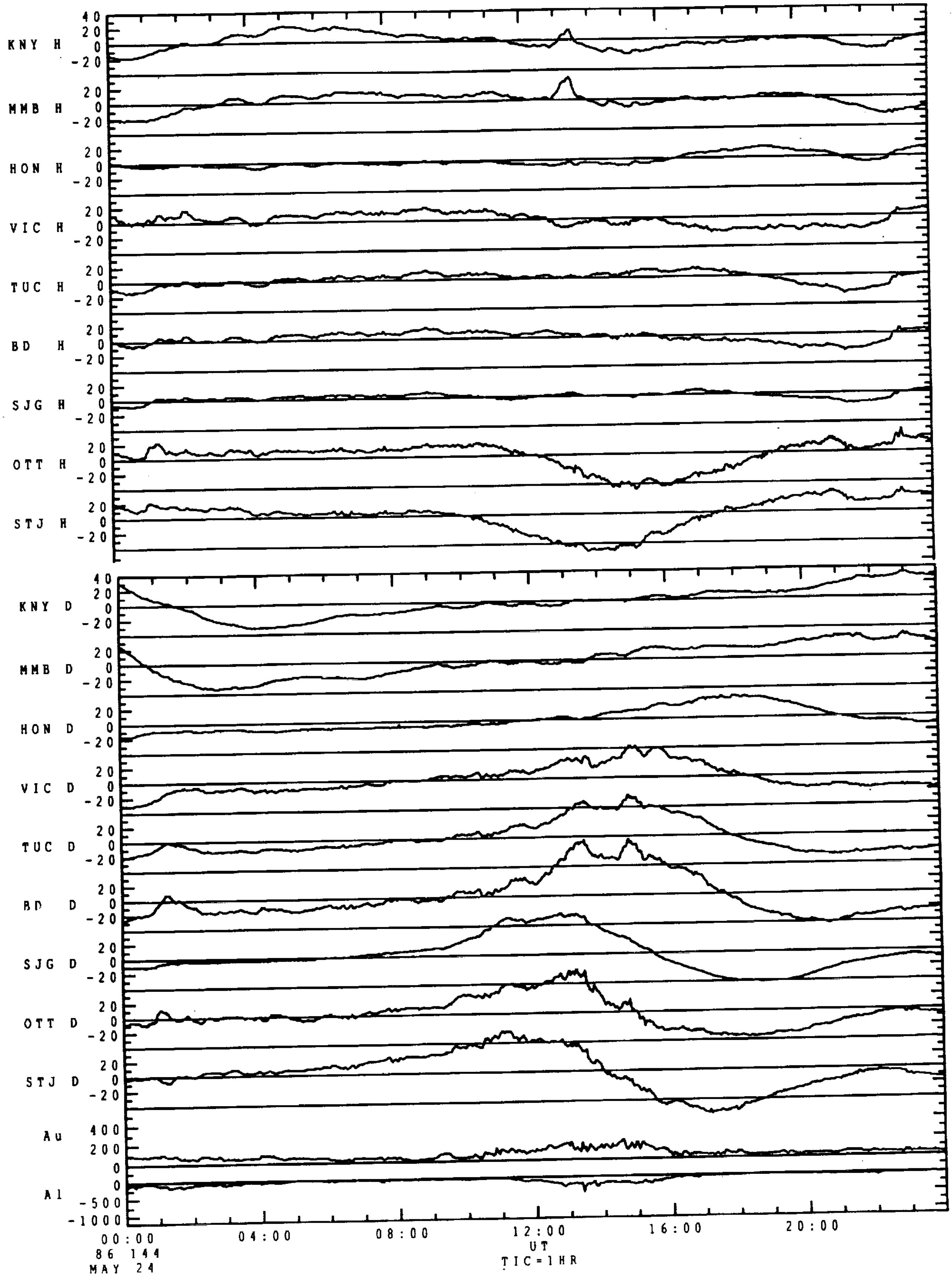


MAY 23, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STH H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 143
MAY 23
UT
TIC=1HR

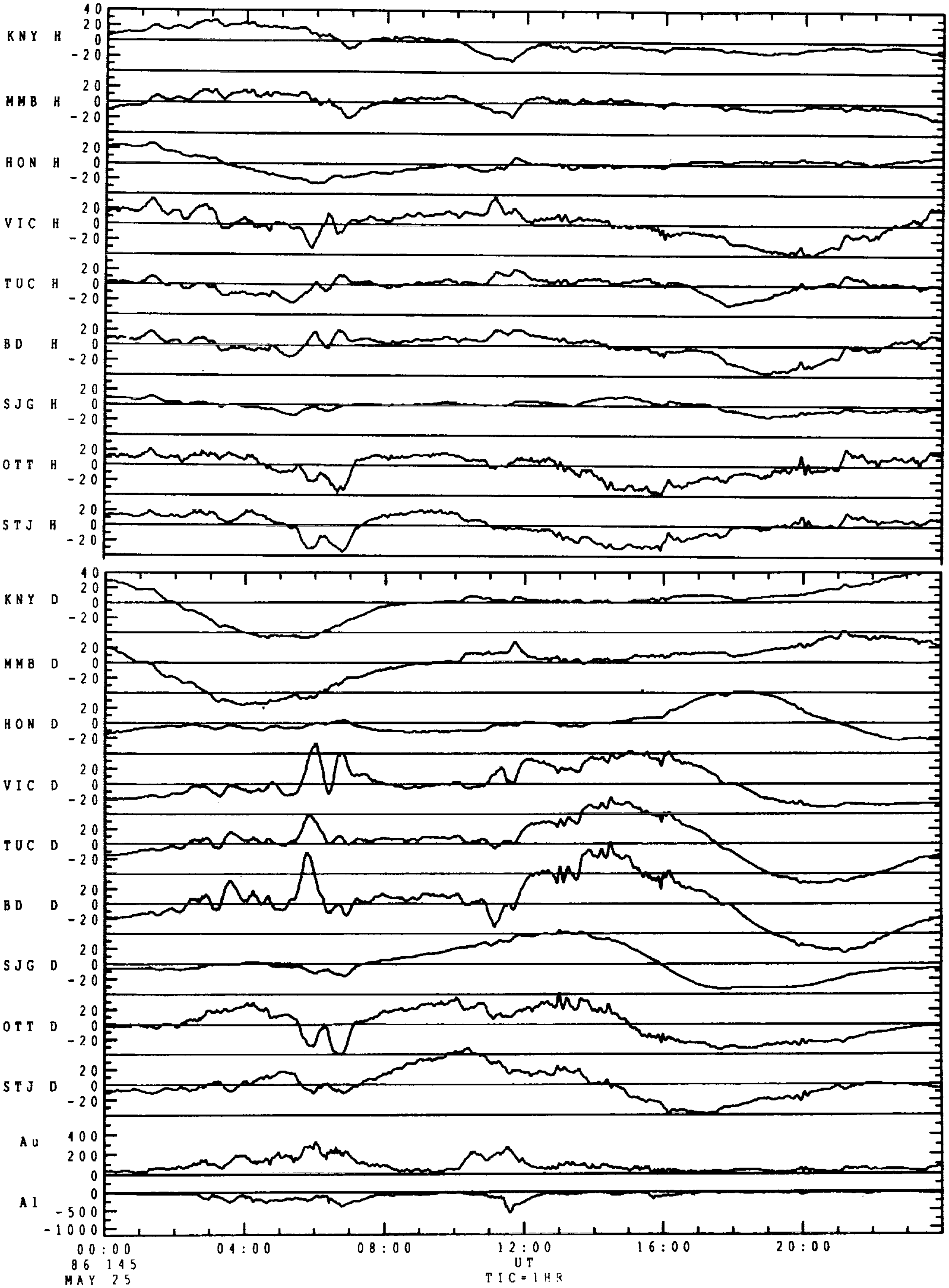
MAY 24, 1986

UCLA IGPP 90 JAN

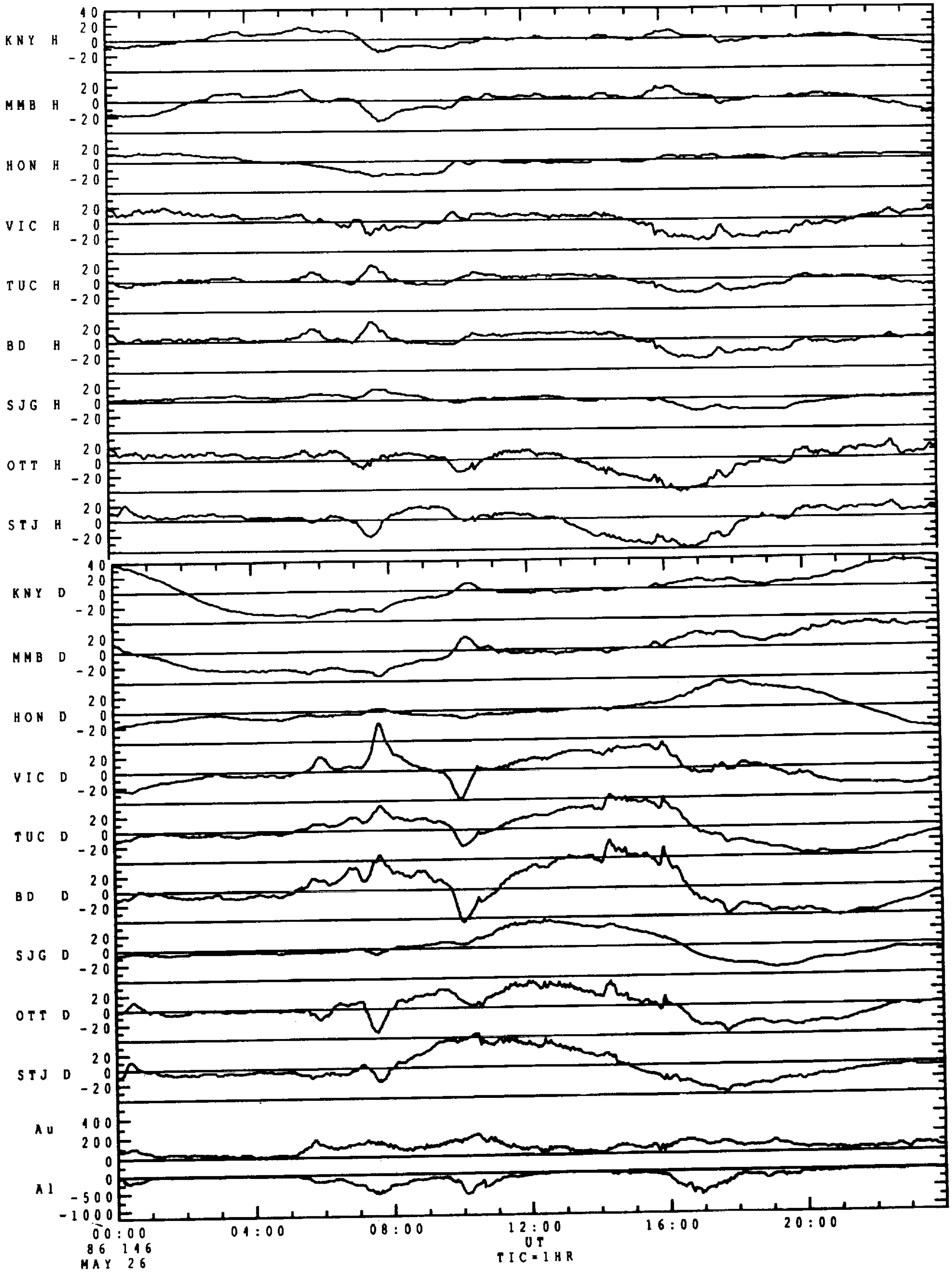


MAY 25, 1986

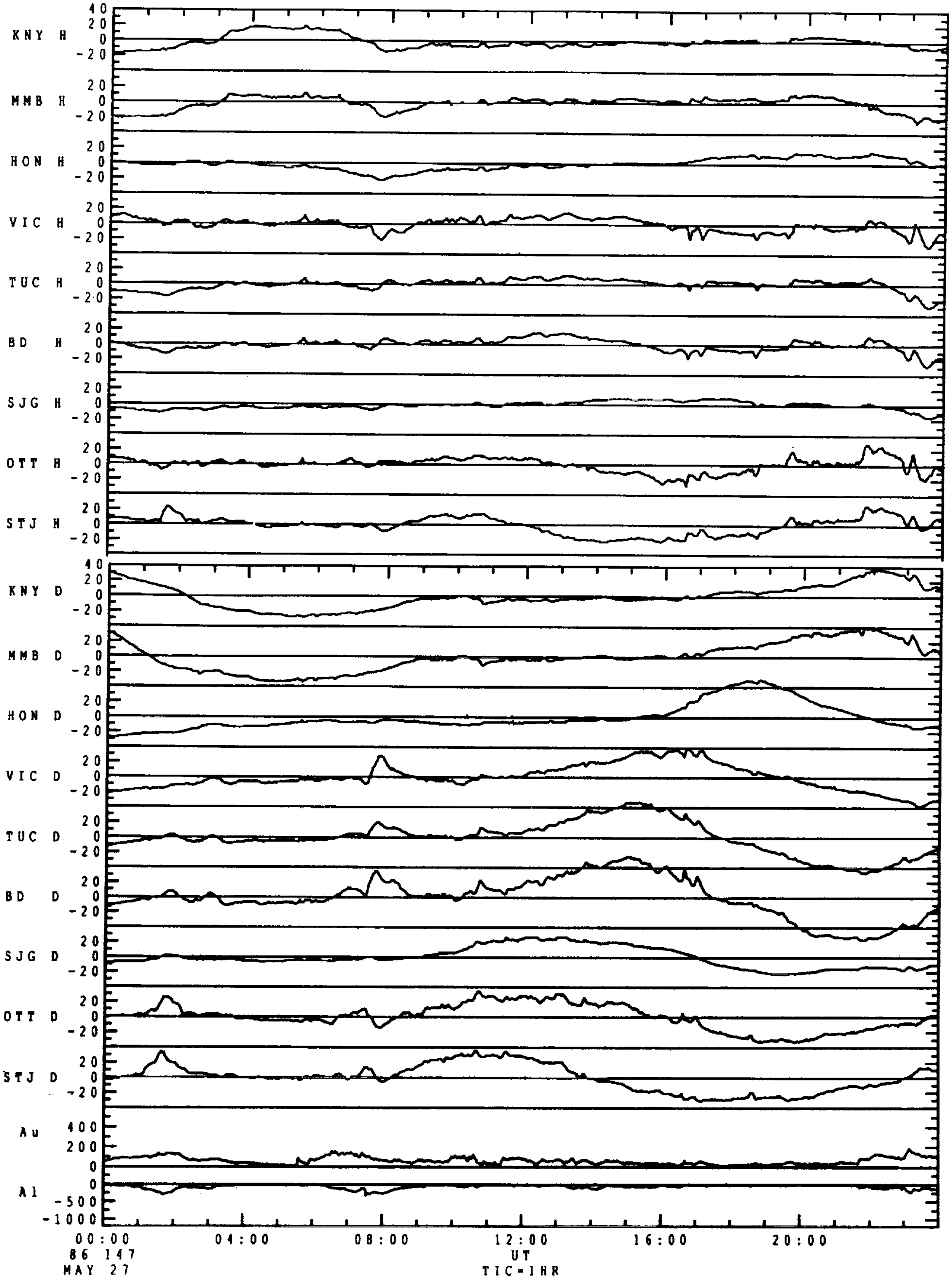
UCLA IGPP 90 JAN 6



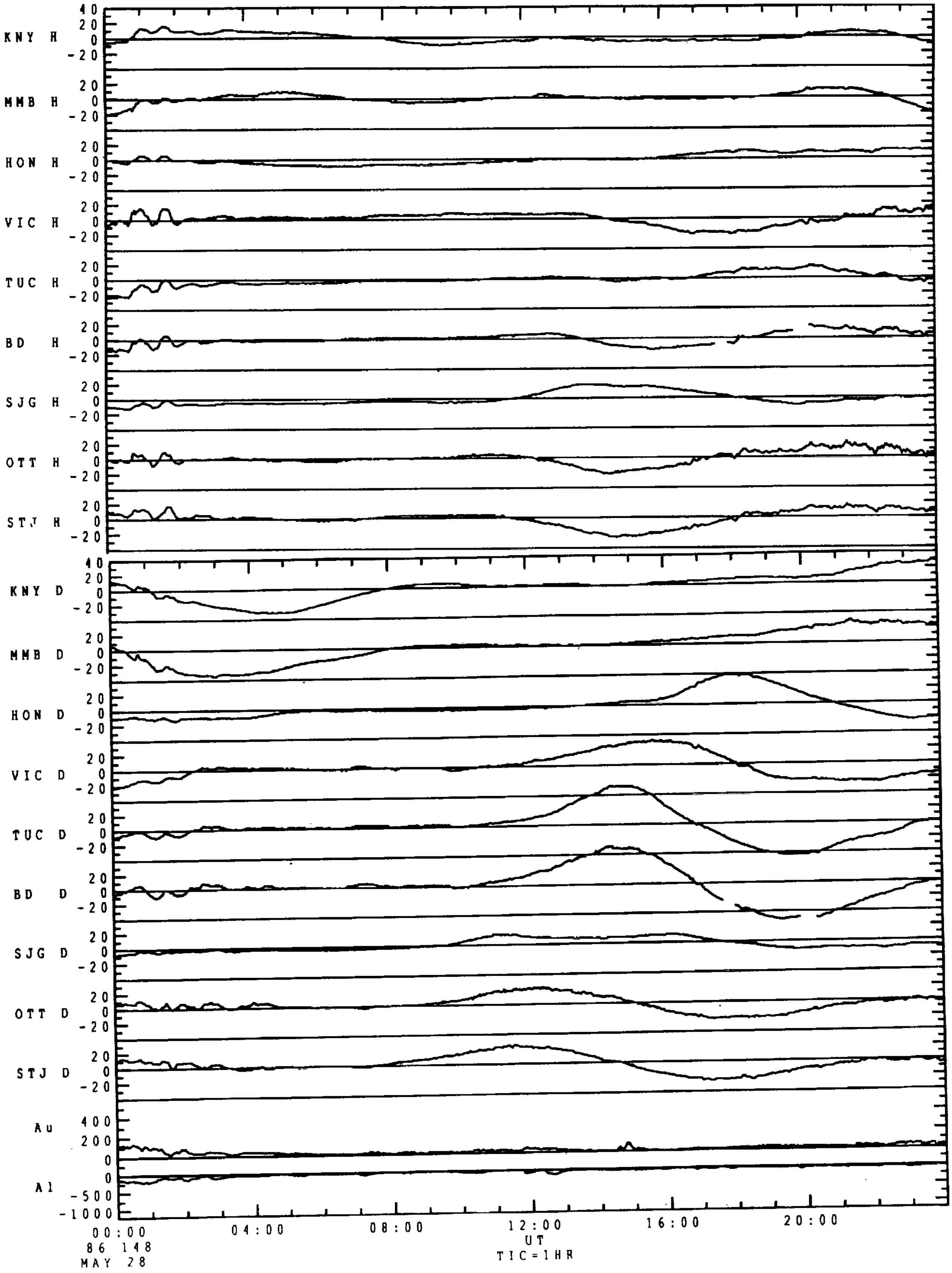
MAY 26, 1986


KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
400
200
0
Al
0
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 146
MAY 26
UT
TIC=1HR

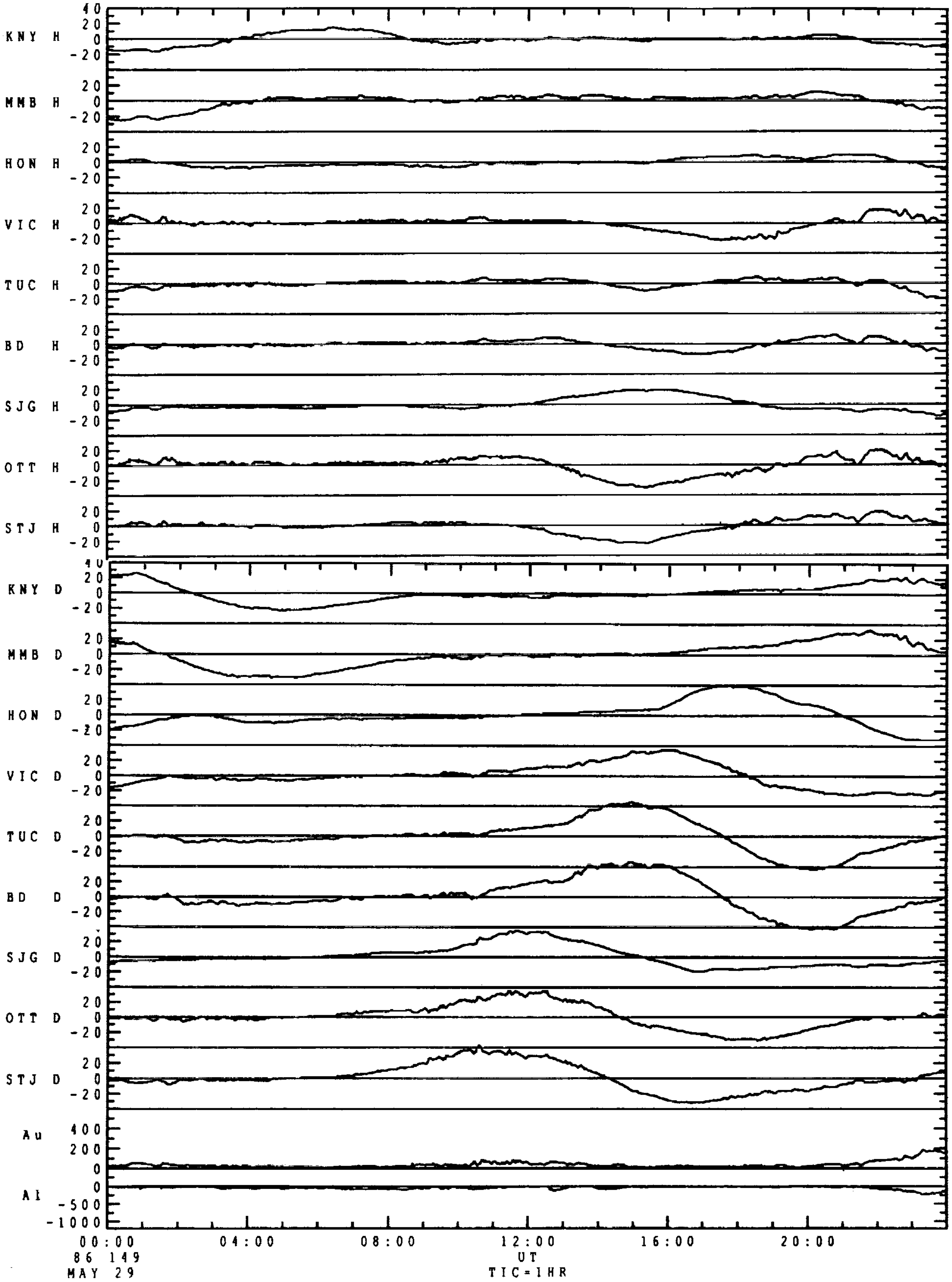
MAY 27, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 147
MAY 27
UT
TIC=1HR

MAY 28, 1986


KNY H
40
20
0
-20
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
400
200
0
Al
0
-500
-1000
00:00
86 148
MAY 28
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

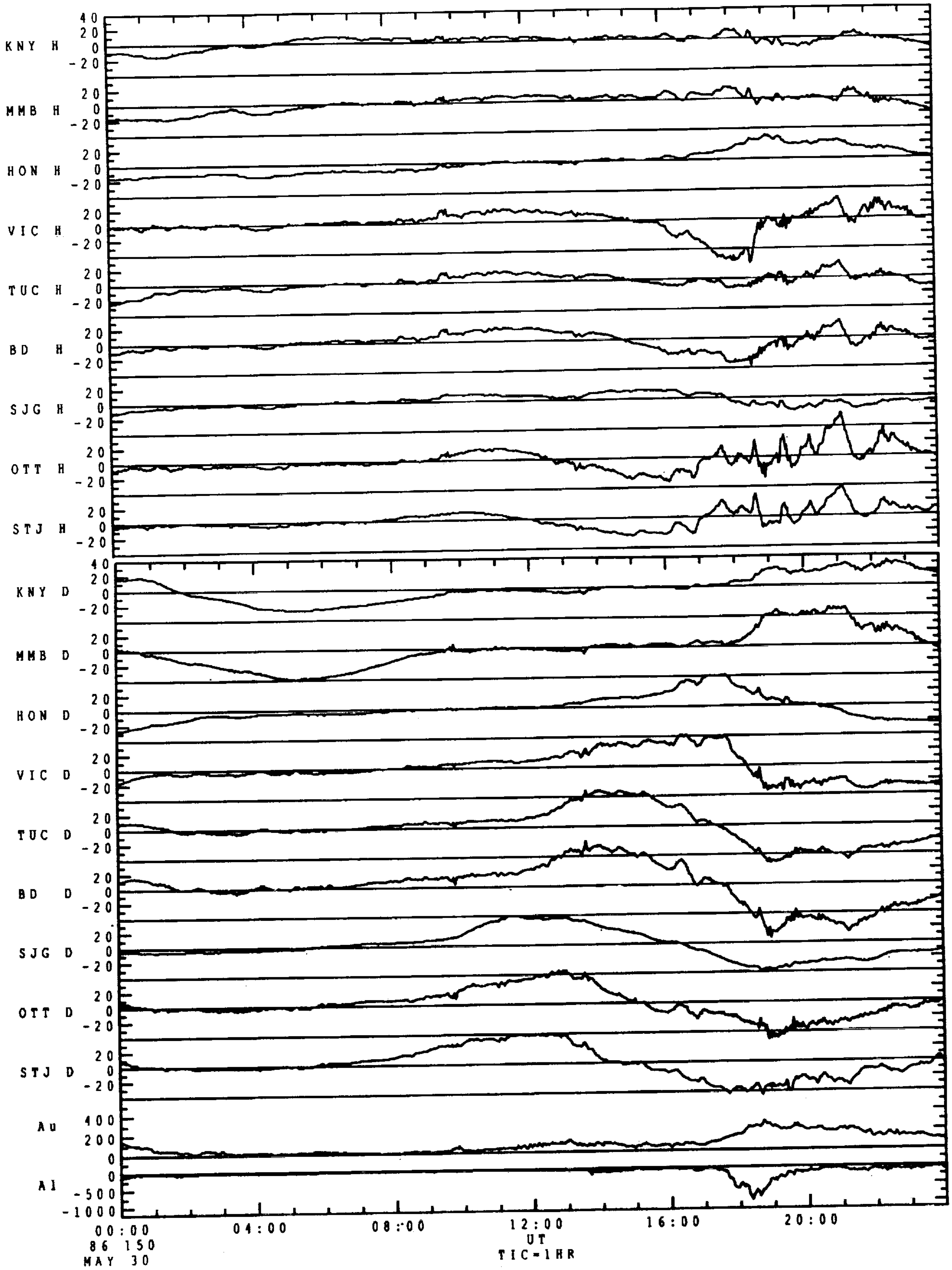
MAY 29, 1986



KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 149
MAY 29
UT
TIC=1HR

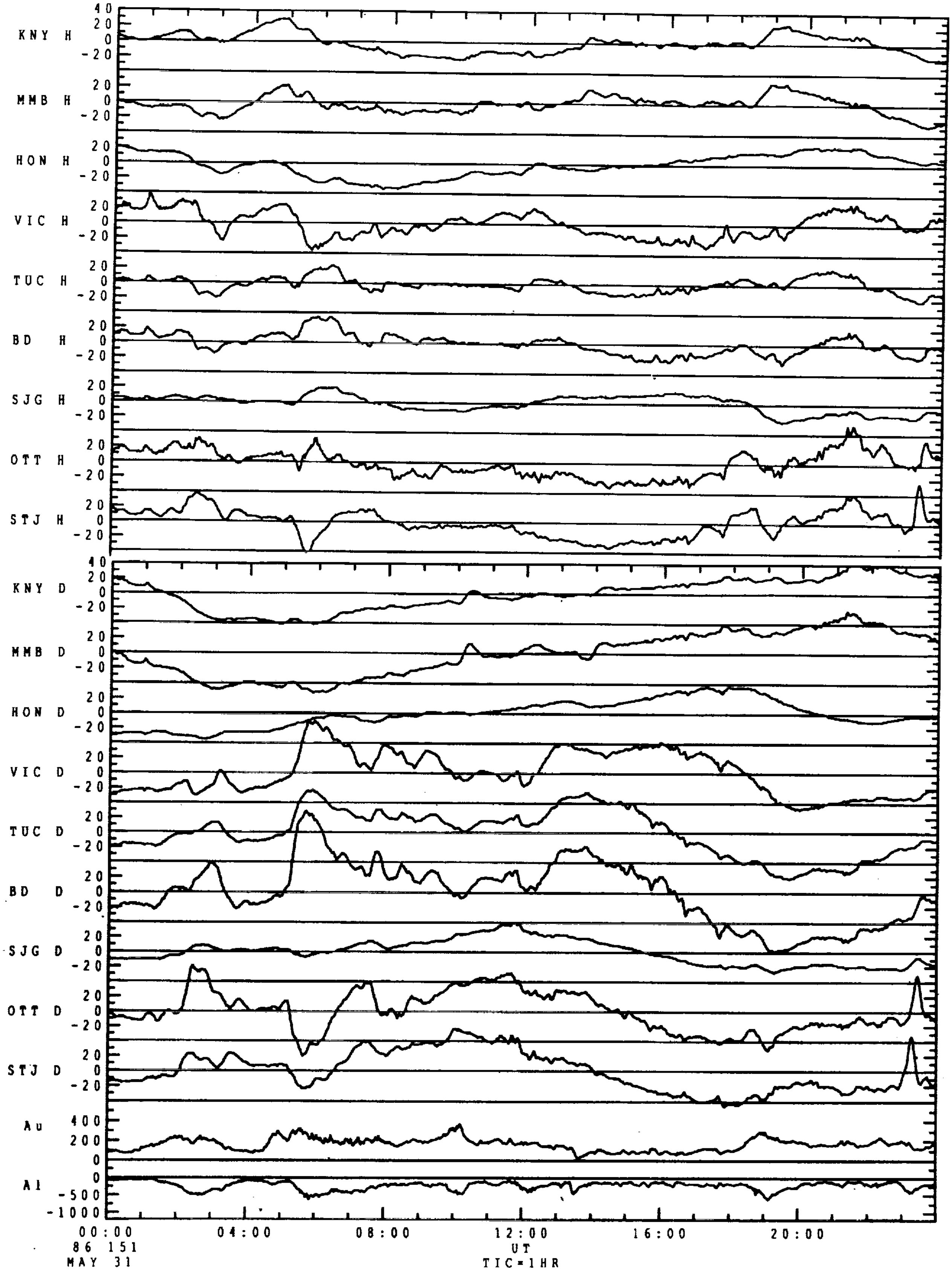
MAY 30, 1986

UCLA IGPP 90 JAN 6

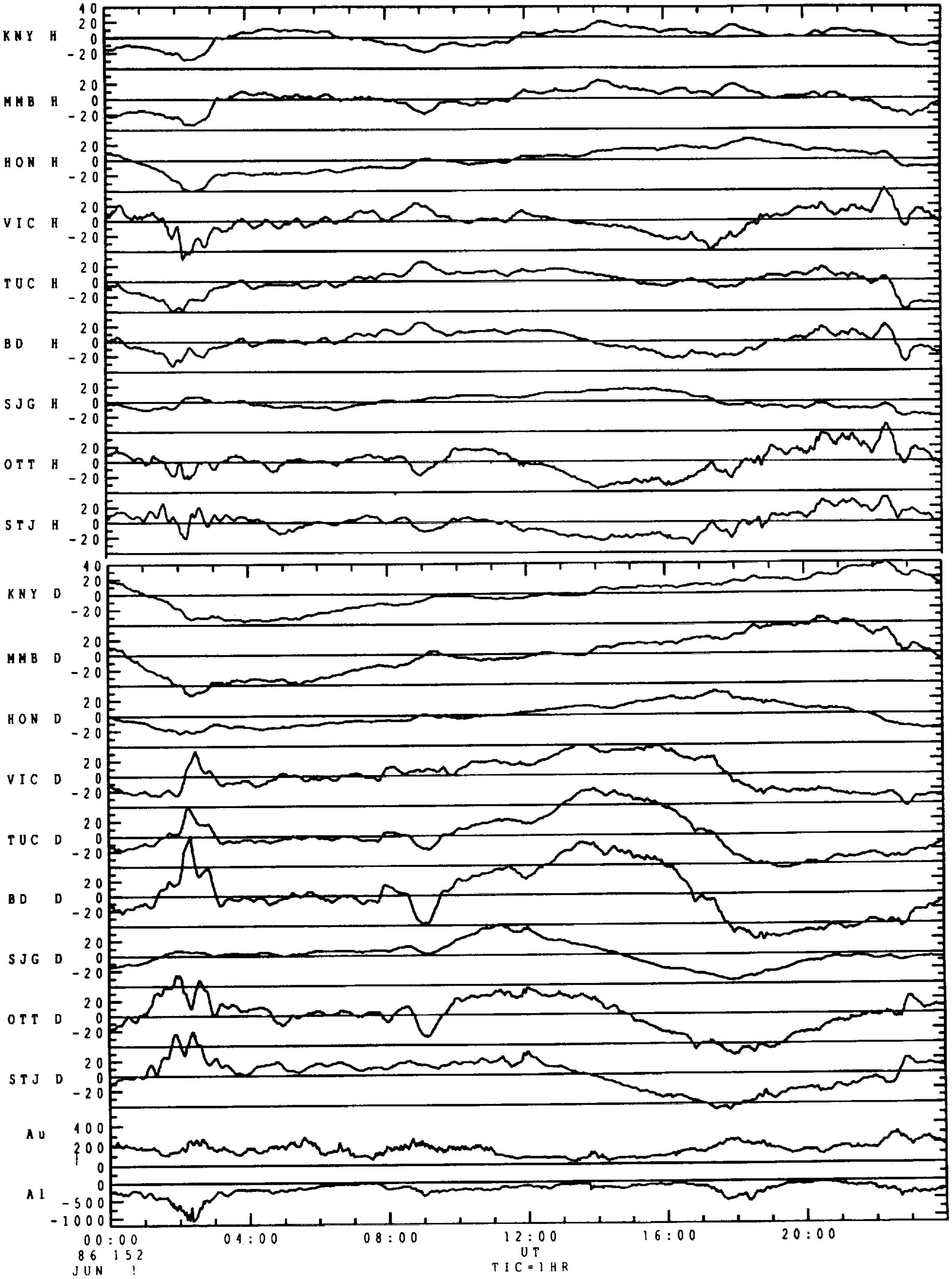


MAY 31, 1986

UCLA IGPP 90 JAN 5

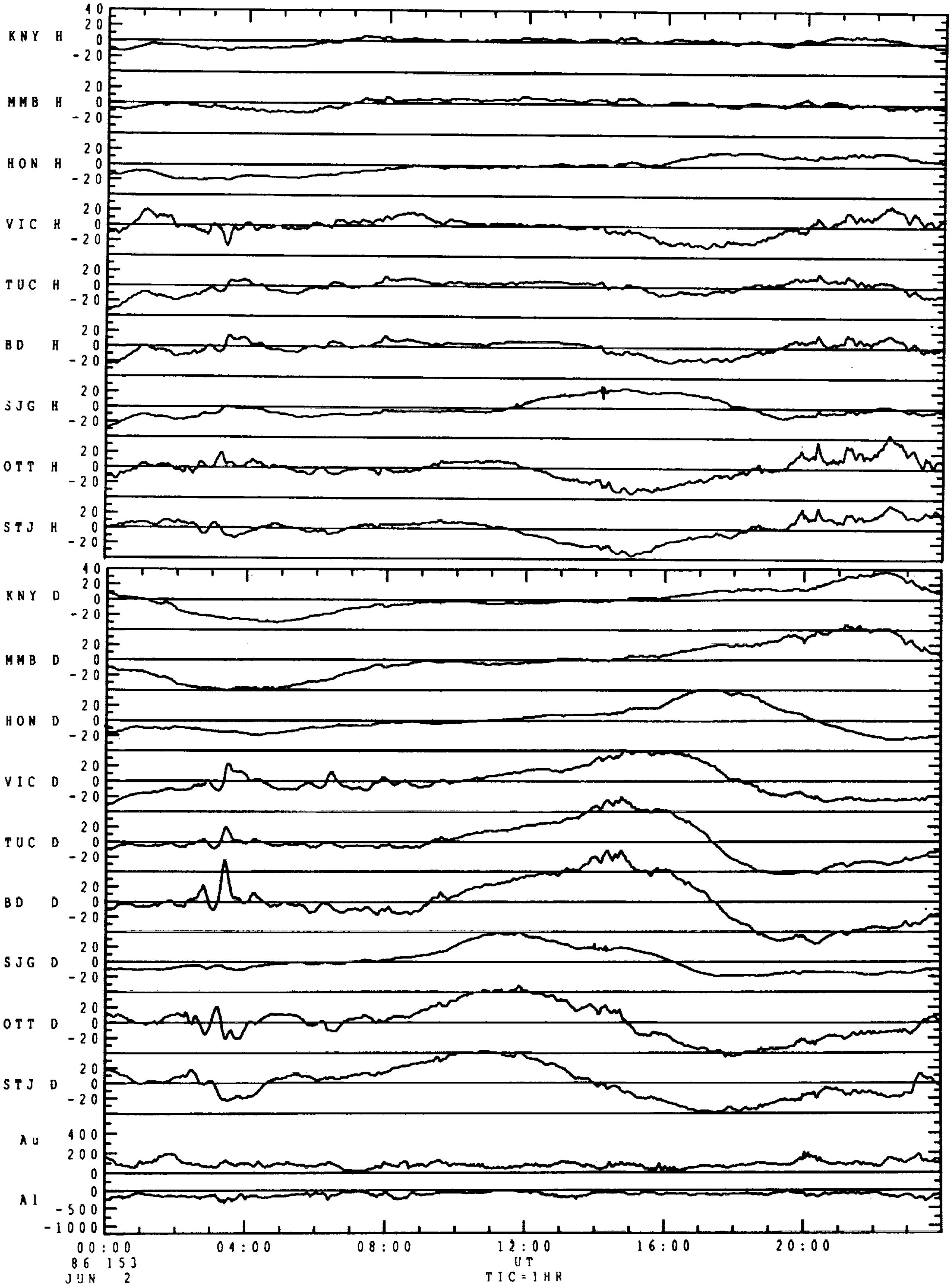


JUN 01, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 152
JUN 1
UT
TIC=1HR

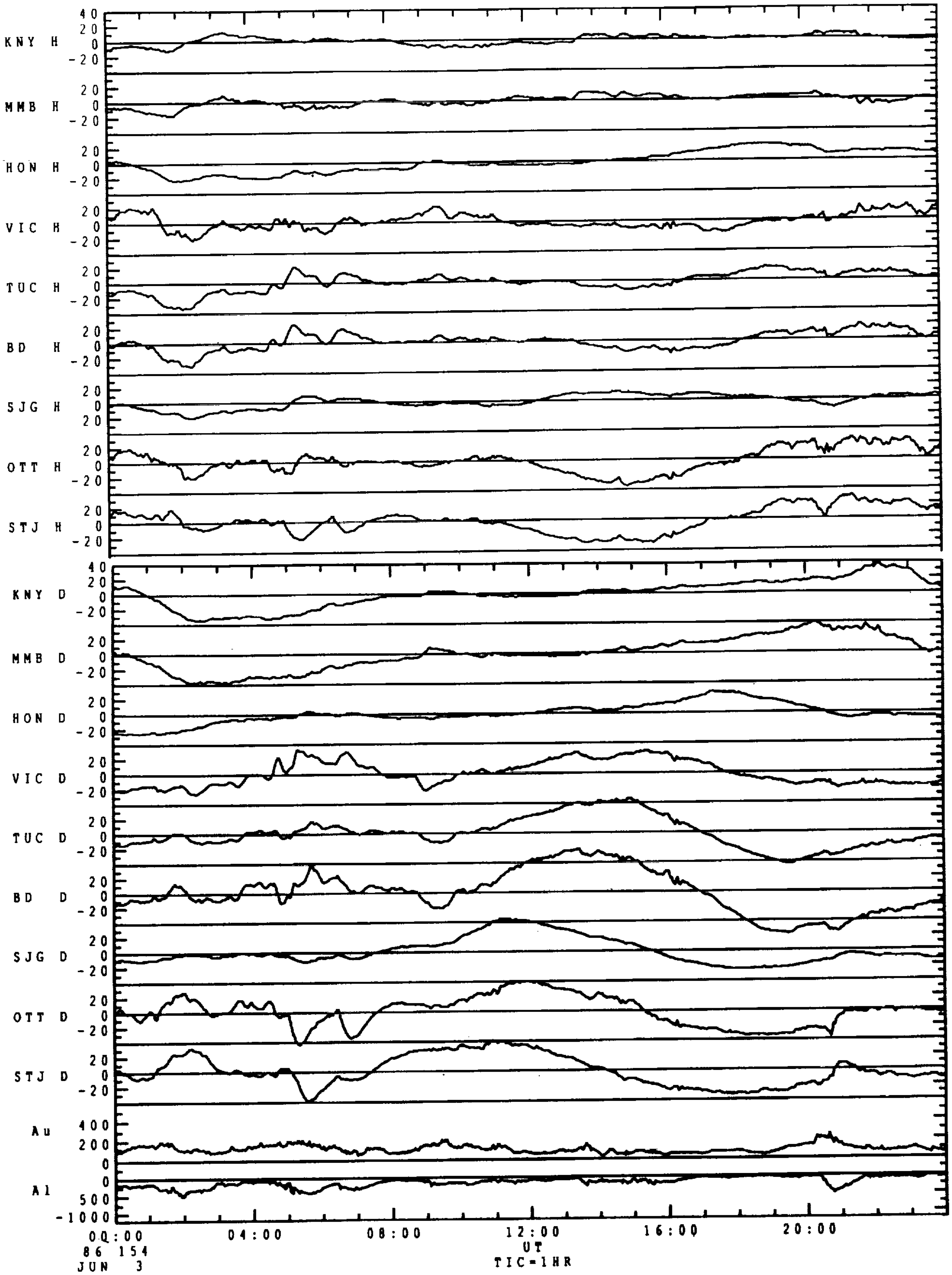
JUN 02, 1986

UCLA IGPP 90 JAN 6

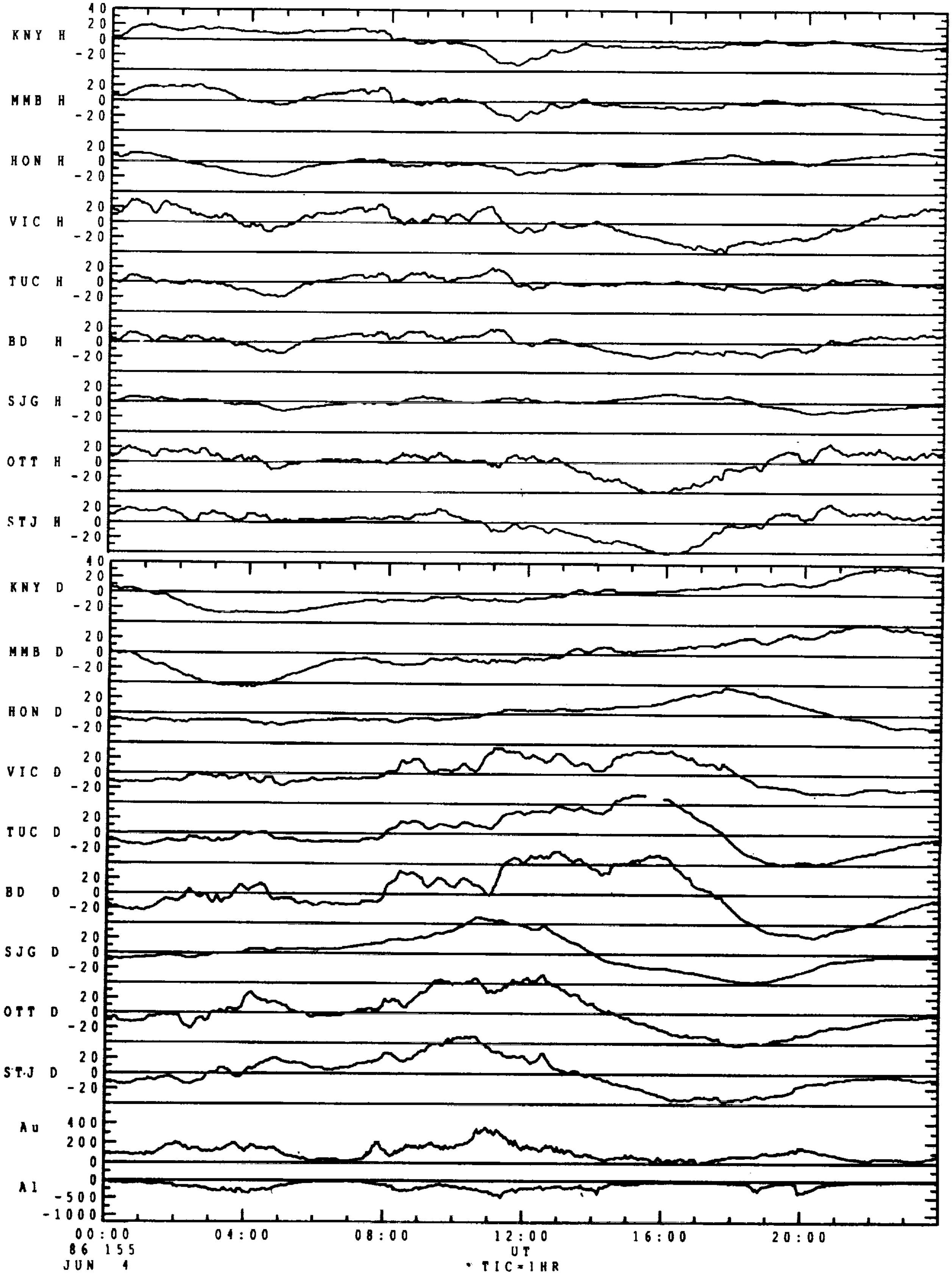


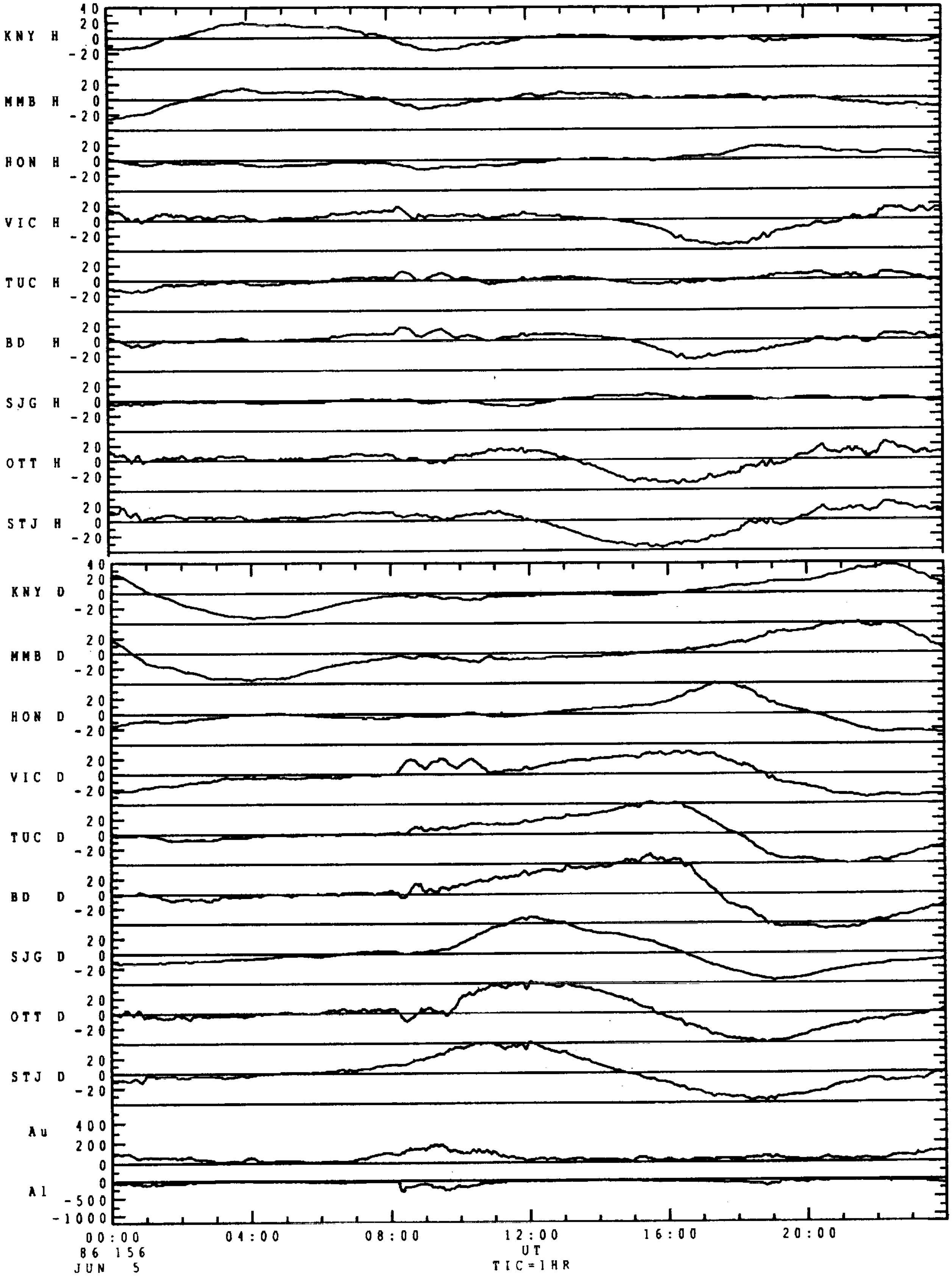
JUN 03, 1986

UCLA IGPP 30 JAN 6

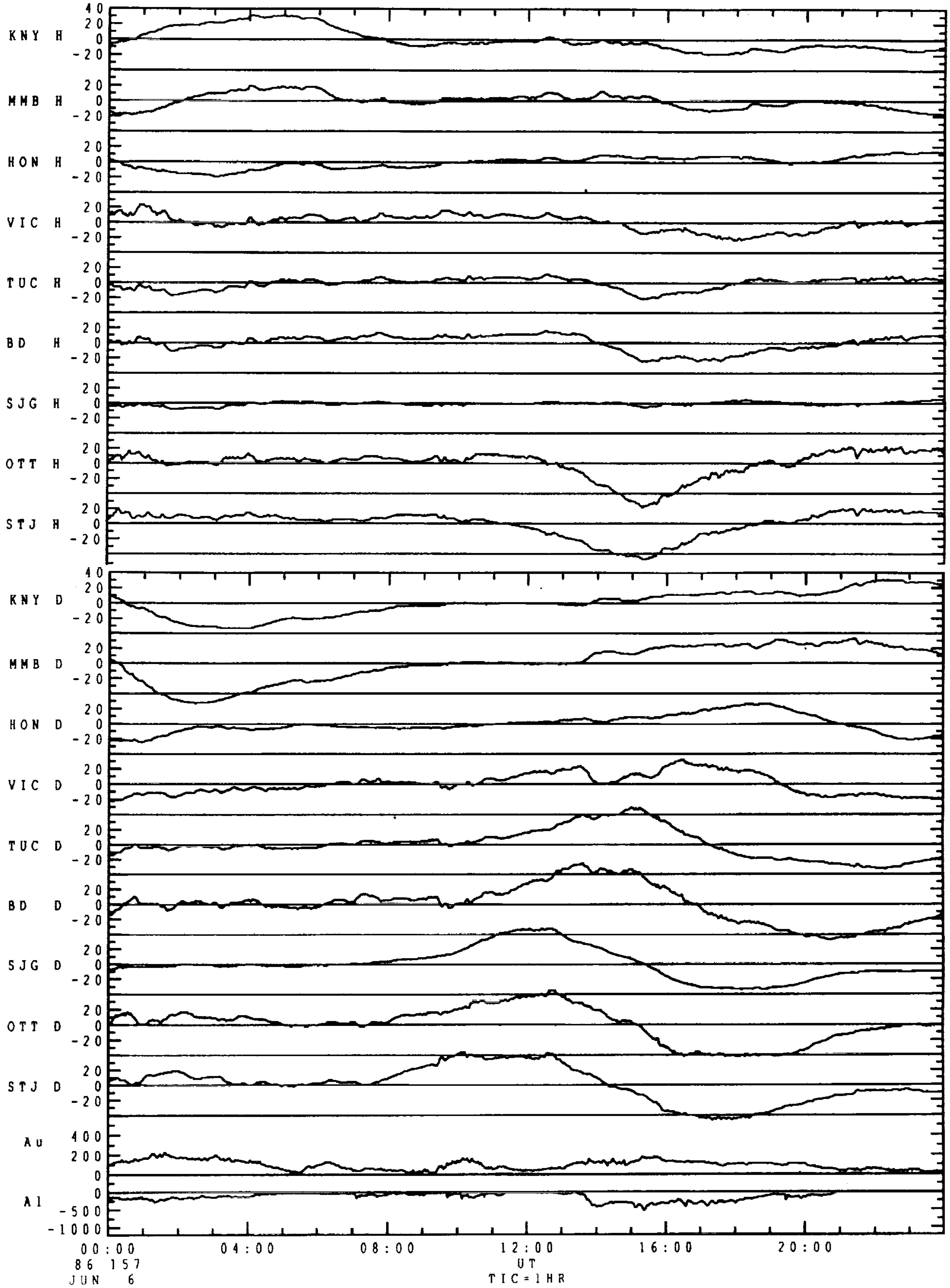


JUN 04, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
86 155
JUN 4
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

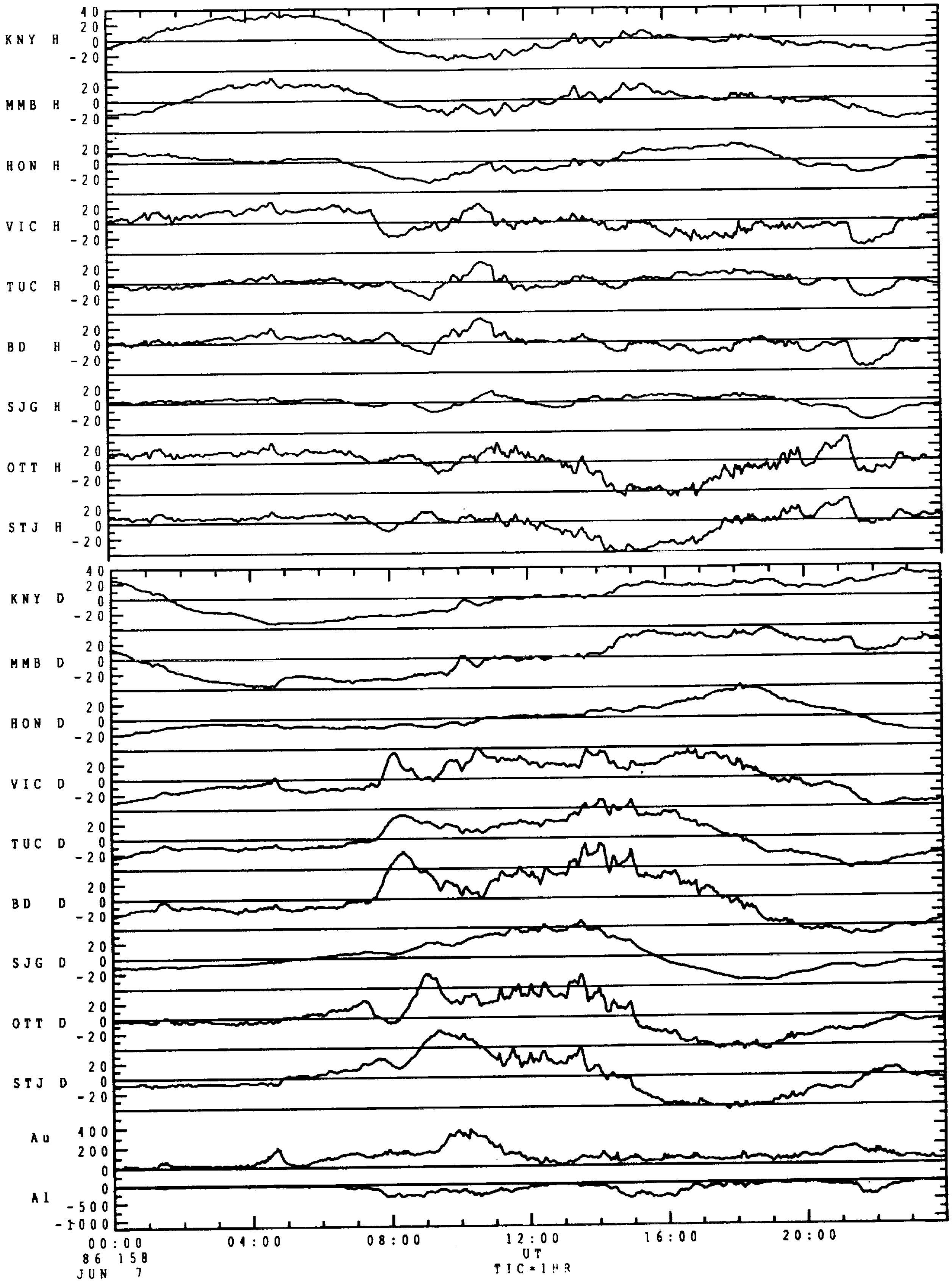

KNY H
40
20
0
-20
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
400
200
Al
-500
-1000
00:00
86 156
JUN 5
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00

JUN 06, 1986


KNY H
40
20
0
-20
MMB H
20
0
-20
HON H
20
0
-20
VIC H
20
0
-20
TUC H
20
0
-20
BD H
20
0
-20
SJG H
20
0
-20
OTT H
20
0
-20
STJ H
20
0
-20
KNY D
40
20
0
-20
MMB D
20
0
-20
HON D
20
0
-20
VIC D
20
0
-20
TUC D
20
0
-20
BD D
20
0
-20
SJG D
20
0
-20
OTT D
20
0
-20
STJ D
20
0
-20
Au
400
200
0
Al
0
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 157
JUN 6
UT
TIC=1HR

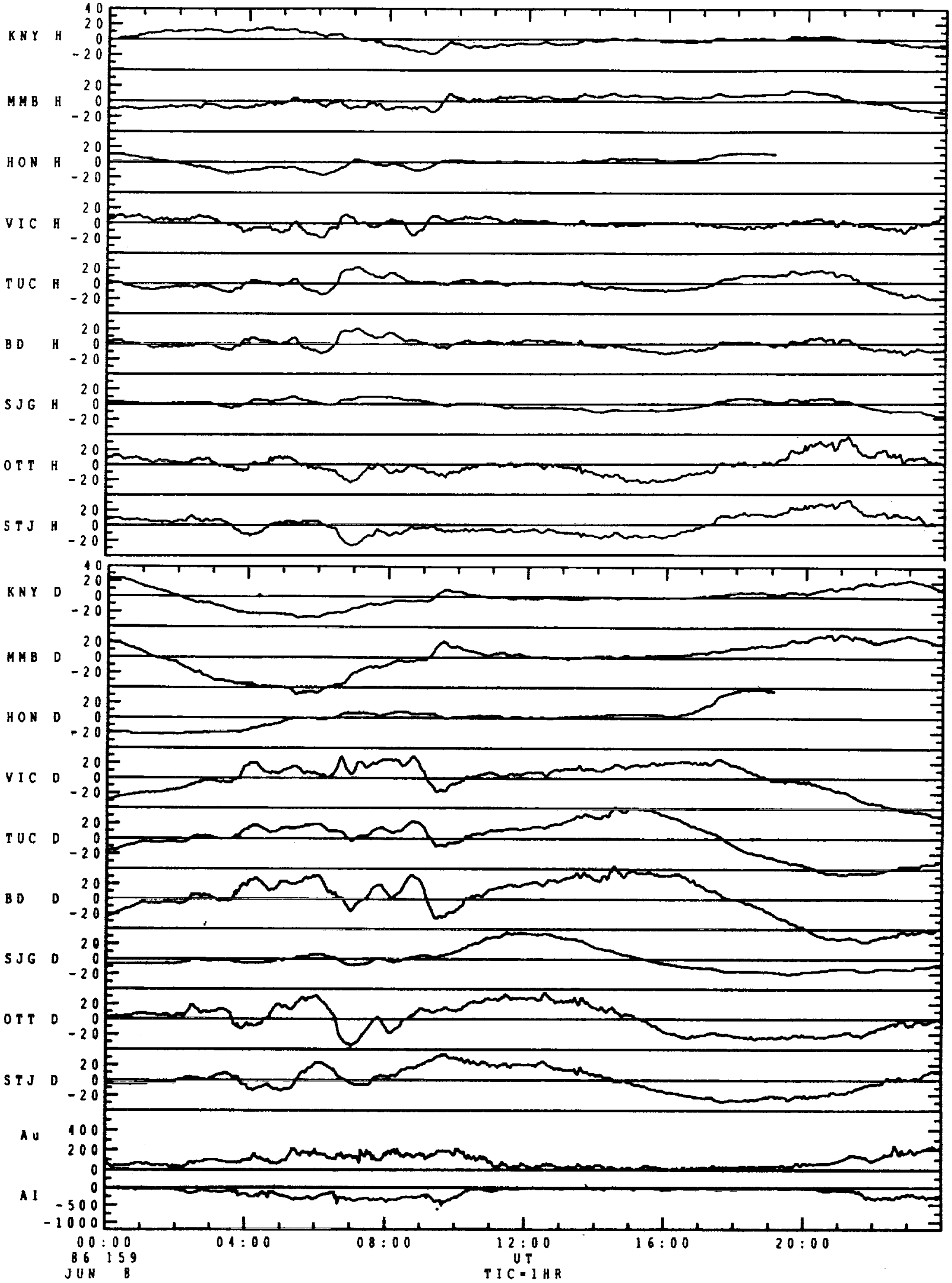
JUN 07, 1986

UCLA IGPP 90 JAN

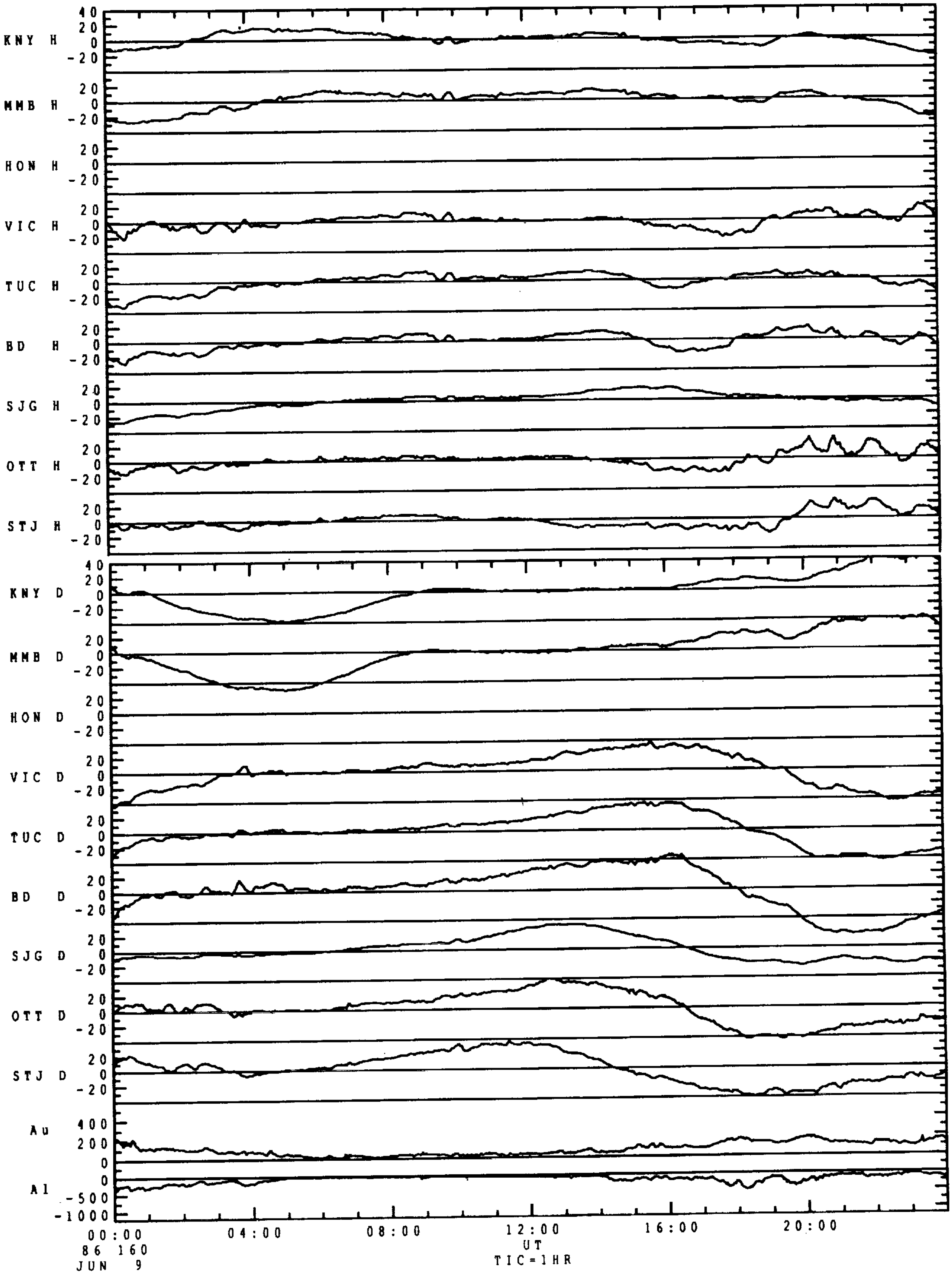


JUN 08, 1986

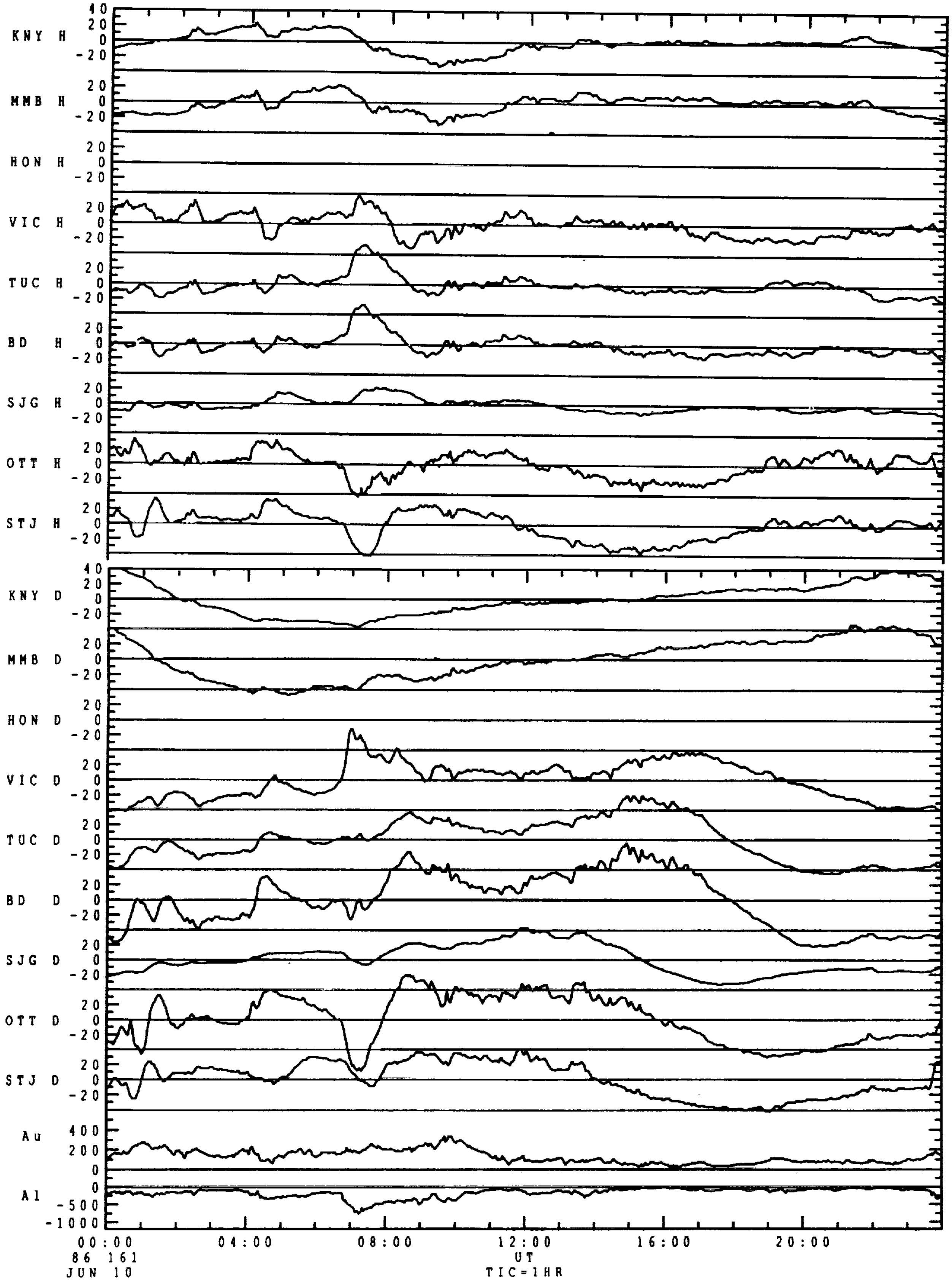
UCLA IGPP 90 JAN 8



JUN 09, 1986

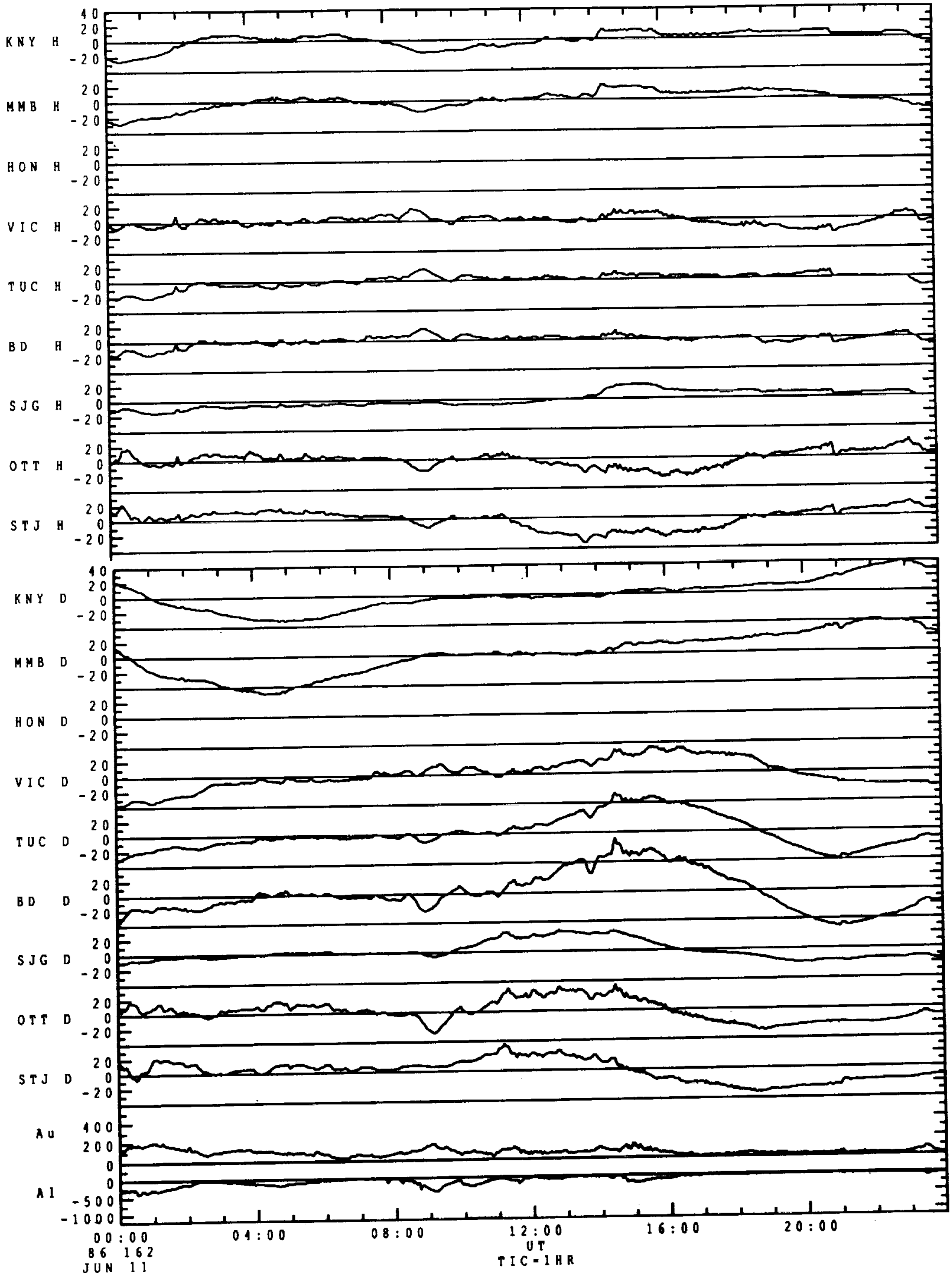

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 160
JUN 9
UT
TIC=1HR

JUN 10, 1986 UCLA IGPP 90 JAN 8



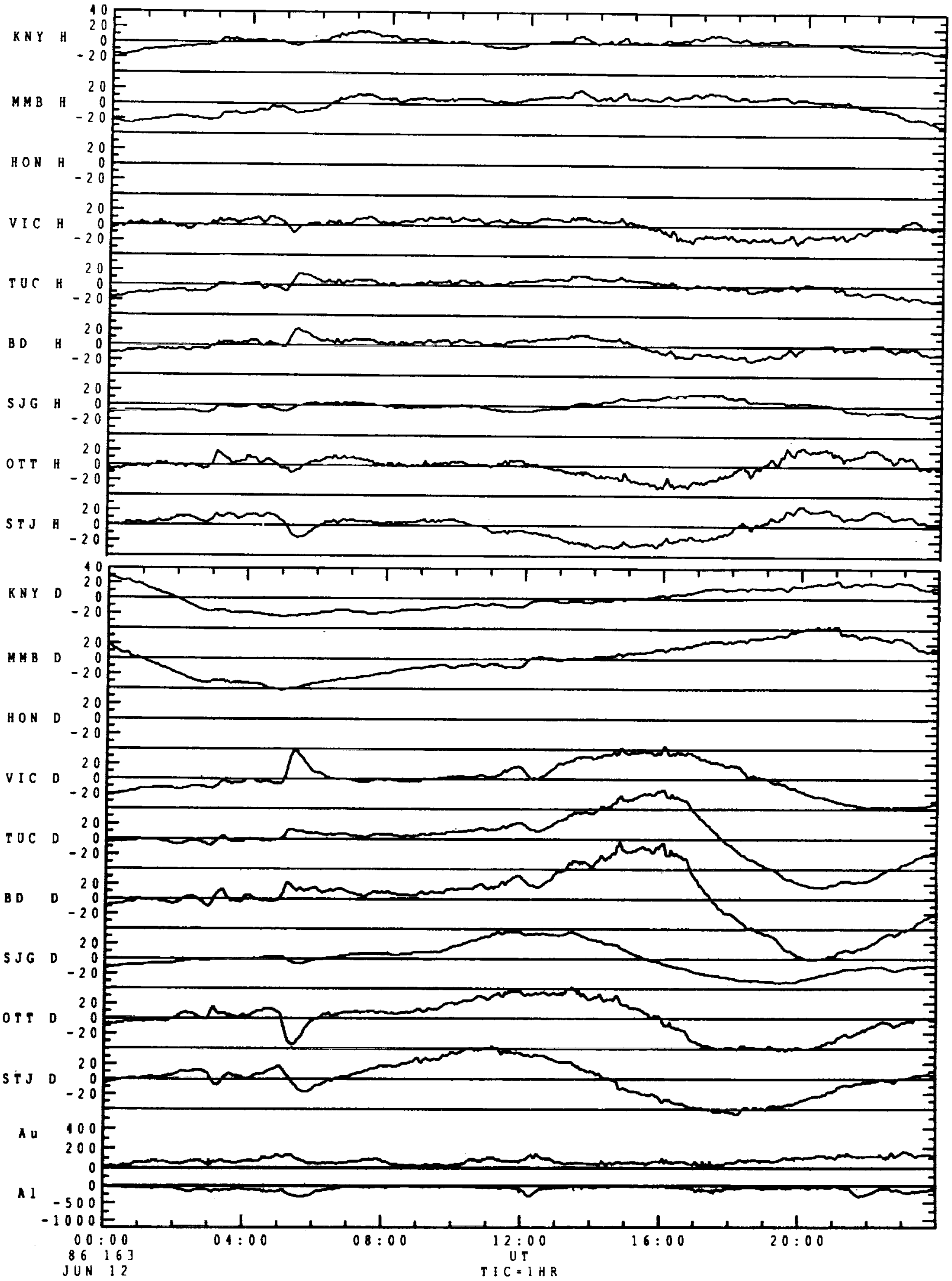
JUN 11, 1986

UCLA IGPP 90 JAN 8

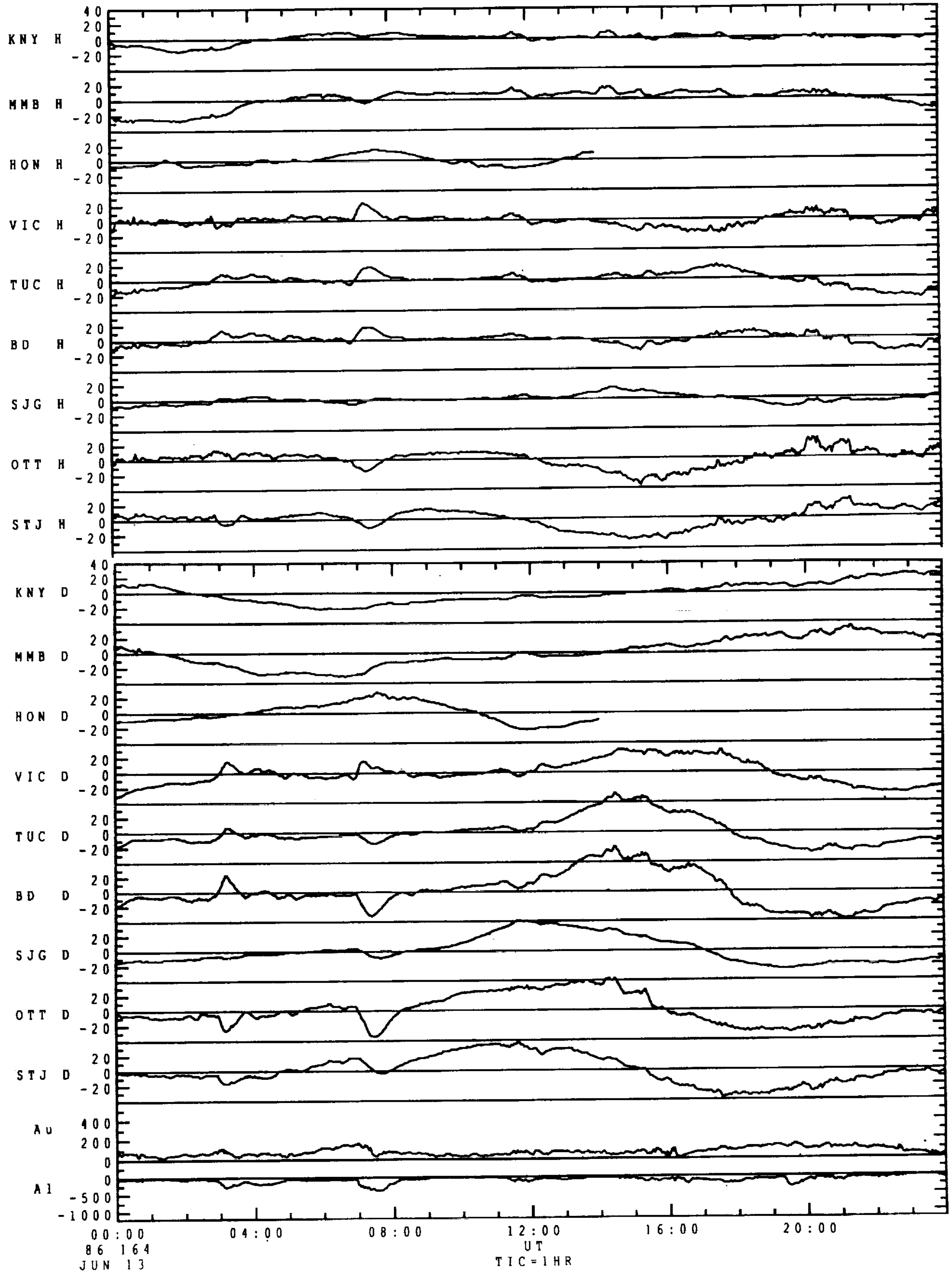


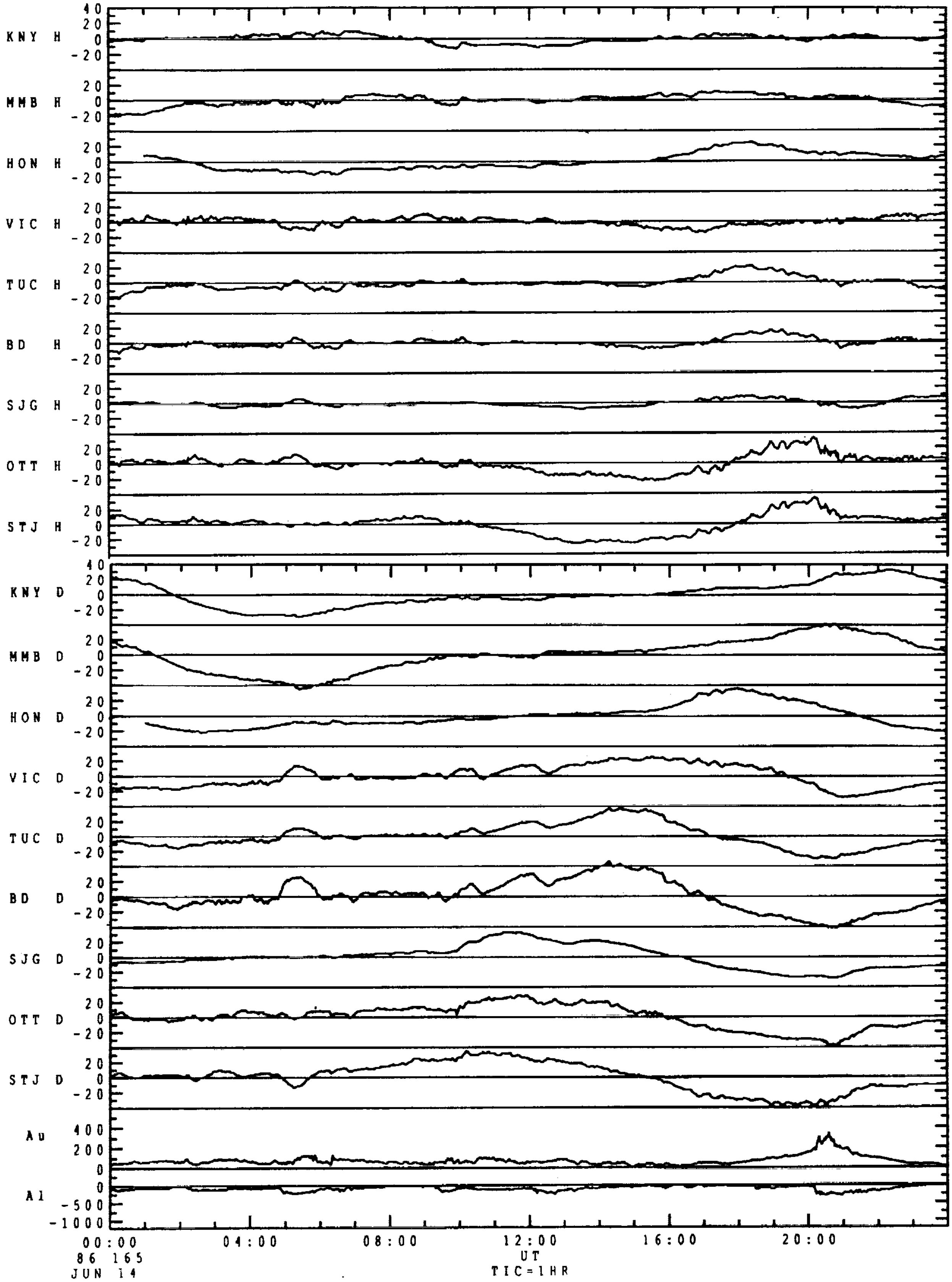
JUN 12, 1986

UCLA IGPP 30 JAN 5

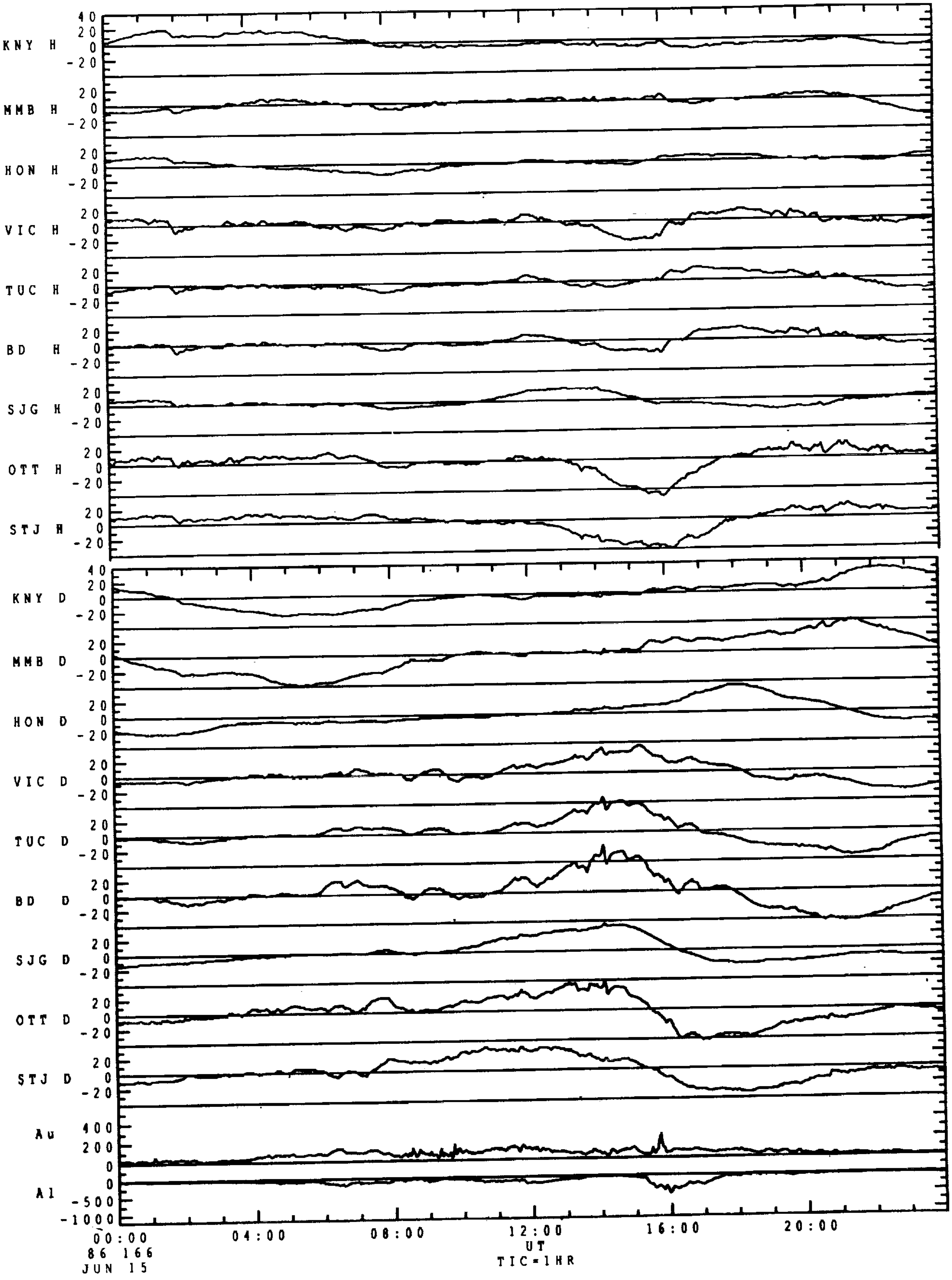


JUN 13, 1986

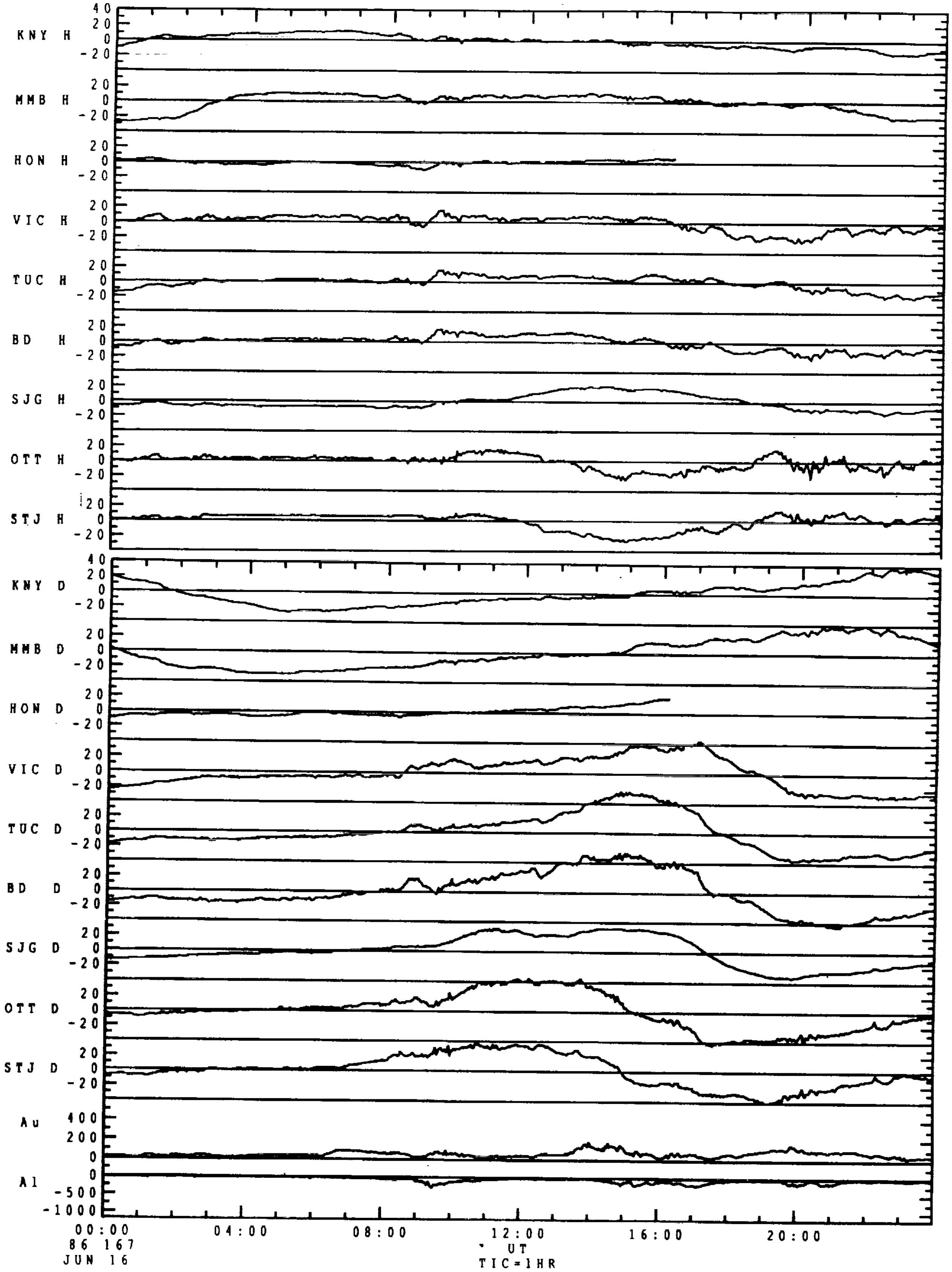

KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
86 164
JUN 13
04:00
08:00
12:00
UT
TIC=1HR
16:00
20:00


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 165
JUN 14
UT
TIC=1HR

JUN 15, 1986


KNY H
MMB H
HON H
VIC H
TUC H
BD H
SJG H
OTT H
STJ H
KNY D
MMB D
HON D
VIC D
TUC D
BD D
SJG D
OTT D
STJ D
Au
Al
40
20
0
-20
400
200
-500
-1000
00:00
04:00
08:00
12:00
16:00
20:00
86 166
JUN 15
UT
TIC=1HR

JUN 16, 1986

UCLA IGPP 90 JAN 6